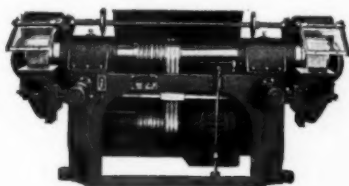


Hitchcock's Machine Tool Blue Book

JUNE, 1930

TWENTY-FIFTH YEAR

Standard High Speed Snagging Grinder



For use with Bakelite high speed ring wheels of 20", 24" and 30" diameter, 10" or 12" hole, running at 9000 SFPM.

Motors, 7½, 10 and 15 HP sizes.

General Electric Ball Bearing Motors and G. E. Push Button Control.

Shaft 4" Diameter, Nickel Steel.

Bearings, 4 SKF Heavy Duty.

The Standard Electrical Tool Co.
1948 W. 8th Street, Cincinnati, Ohio

PUBLISHED AT 508 So. DEARBORN ST. CHICAGO

*Where the shaft is
always running, and
the pulley stands still
when idle —————*



THE CONWAY DISC CLUTCH

*is the only competent
answer to the problem*

Wherever starting and stopping takes place, make it a smoother, a more capable and more lastingly satisfactory performance. The Conway will do it.

And besides—what other clutch can give you Drag-Free Idling—

Investigate—Have you our catalogue P-20?

THE CONWAY CLUTCH CO.
1541 Queen City Ave., Cincinnati, Ohio

Hitchcock's Machine Tool Blue Book

Selected
Circulation

25,000
Monthly

JUNE, 1930

TWENTY-FIFTH YEAR

Only \$1.60 a Page

Per 1,000 of Selected Circulation

That is the monthly cost of advertising in this publication on annual order.

The larger part of that circulation is to concerns worth \$20,000 to \$50,000 and up, and the selection of all of it is made with the greatest care, with an experience of 25 years in locating the worth-while buyers.

It is NOT cheap advertising, for that means cheap service.

IT IS, however, economical advertising—which is highly desirable for anyone who cares about his costs—for it gives most unusual service per dollar expended.

This combination of a broad and effective service at a low rate is made possible only by the Hitchcock plan of a specialized advertising medium in handy form, which has been in successful operation for a quarter of a century.

*Write for further details of this
unique and profitable service*

Published By

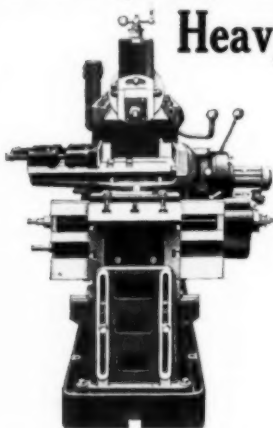
Hitchcock Publishing Co.

508 S. Dearborn St.,

Chicago, Ill.

Consult the Classified Finding Index for your requirements

For Speed, Accuracy and Heavy Duty Work



The NEW AMERICAN Auto-Oiled SHAPER

is
Unsurpassed



The New American *Auto-Oiled* Shaper is the last word in shaper practice. Into it we've put all the experience gained in more than fifty years of building fine machine tools. It's built right; built to last; and incorporates the following features:

Timken Roller Bearings, automatic lubrication to every wear point, direct reading cross-feed, multiple splined gear shafts mounted on roller bearings, alloy helical gears, two-piece bull wheel, multiple disc clutch, "V" slides, direct reading of ram stroke, etc,

Write for illustrated booklet and see how Shaper design has been revolutionized in the New American "Auto-Oiled" Shaper.

The American Tool Works Company

Cincinnati, Ohio, U. S. A.

LATHES

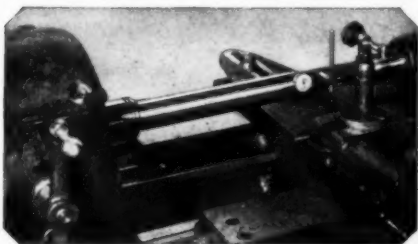
RADIALS

SHAPERS

Accuracy!

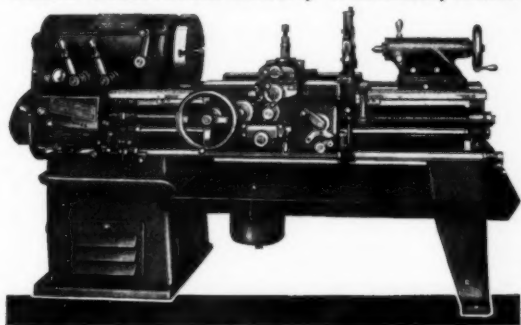
unexcelled—

NEW MODEL REED-PRENTICE Sliding Gear Head Lathe

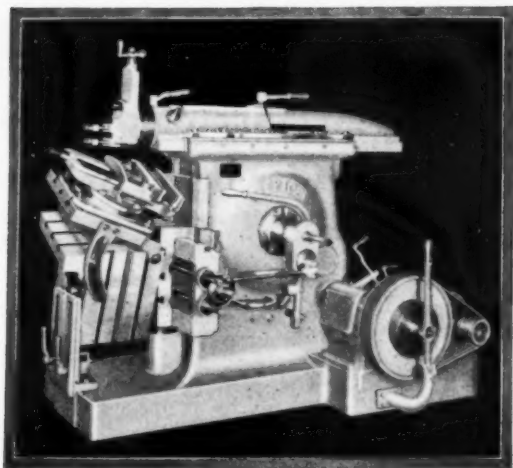


Spindle alignment—12" bar. .0005 up or down, in or out.
Spindle run out at end 12" bar within .001.

REED-PRENTICE CORP., Worcester, Mass.



STEPTOE SHAPERS



Texrope Motor Drive—Guards not shown

SPEED—ACCURACY—POWER

STEPTOE Shapers have been built since 1845—and years of experience have taught what is necessary in building a good machine, one that will meet the three leading demands of today—**SPEED, ACCURACY and POWER.** Many time-saving features are incorporated, one of the most important being Centralized Control. Levers for starting, stopping, speed control, feed changes, ram and stroke adjustment—are all reached by the operator without leaving his working position.

Timken Bearing Equipped Throughout

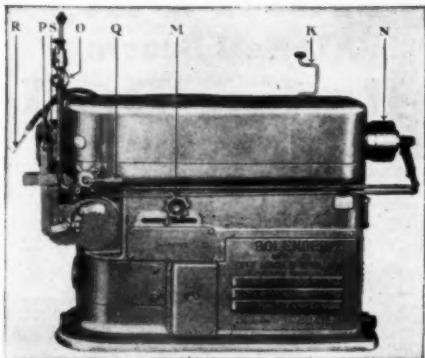
Adequate bearings promote efficiency and prolong the life of any machine. The whole drive of STEPTOE Shapers is through Timken Tapered Roller Bearings, providing for accuracy, durability and operating economy. STEPTOE Shapers are made in 14", 16", 20" and 24" sizes, single and back geared.

Write Us Today for Complete Details

Western Machine Tool Works

Holland, Michigan, U. S. A

The New Model **No. 2 Bolender** **Gear Burnisher**



For A Wide Range of Work

THE NEW BOLENDER No. 2 has a large capacity, handling gears up to 14" in diameter, and larger by a slight change in design. Gears lie in a horizontal position—no danger of overhang or unevenness in pressure. Air is utilized for burnishing pressure and is variable.

The BOLENDER provides a proven, satisfactory, fully automatic burnishing cycle. Gears rotate by electrical control under specified pressure a predetermined number of revolutions in one direction, are automatically reversed and rotate an equal number of revolutions in the opposite direction, then automatically stopped. The number of revolutions can be varied to meet your requirements. Timken and Hyatt bearing equipped—automatic lubrication. A dial indicator gives operator constant check on work.

Write for Complete Detailed Description and Price

CITY MACHINE & TOOL WORKS

GEAR GRINDING CHUCKS—GEAR CHAMFERING MACHINES—GEAR BURNISHING MACHINES

3 NORTH JUNE ST.



DAYTON, OHIO

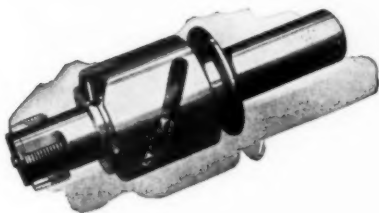
Our Latest Type Multi-Duty All Ball Bearing Radial Drill



Sizes 3 to 8 Ft.

The Dresses Machine Tool Co.
CINCINNATI, OHIO

NAMCO TAPS & DIES.



PROFIT...?

Maybe it isn't the fault of the operator, or the machine.

Maybe—you haven't been using NAMCO Collapsing Taps.

Send for the New Bulletin TDB-3002

The National Acme Co.

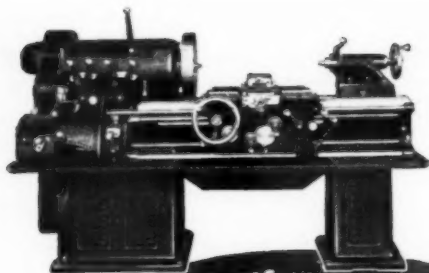
Cleveland, O.

New York City



Windsor, Vt.

Detroit—Chicago



New Design-New Features- New Standard of Precision Monarch's NEW Model "C" Tool-Room Lathe

Monarch's newest contribution to industry is the model C Helical-gear Timkenized Lathe.

Incorporating many new features, it sets new standards of precision and offers many advantages as a tool room lathe. Here are five of its unusual features:

- 1—Timkenized quick-change gear box provides for 60 feed and thread changes.
- 2—Leadscrew reverse mechanism, running in oil, is an integral part of headstock and operated from the apron.
- 3—Built-in relieving attachment—relieves work up to 8° in diameter—internal, external, angular or spiral.
- 4—Smooth quiet, worm-drive in the apron, running in oil, instead of the bevel gears commonly employed.
- 5—New Monarch Standardized Flanged Spindle Nose.

Write for Model "C" Bulletin

The Monarch Machine Tool Co., - Sidney, Ohio
New York Office: 857 Graybar Bldg.

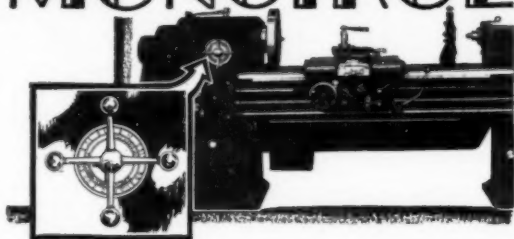
Monarch Lathes



Helical Gears - Timken Bearings
SMOOTHER...QUIETER...MORE POWERFUL



MONOTROL



THE Monotrol One Lever Speed Control—easily operated without taking the eyes from the work—is but one prominent feature of this Sidney lathe.

Herringbone Gears—used only on Monotrol—assure smooth and silent motion, free from wear and, with Timken Bearings located at strategic points, make for increased efficiency.

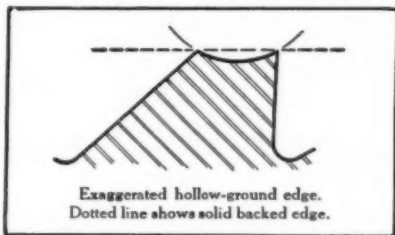
Have you investigated Monotrol? . . . you have never seen a more rigidly constructed lathe.

The multitude of features that are the secret of Monotrol's greater production ability are all described in a new bulletin, just off the press.

Write for it today

The Sidney Machine Tool Co.
SIDNEY, OHIO

Cutting Tools Last Longer-- Cut Better—When Properly Ground



OESTERLEIN Grinders produce a solid backed cutting edge that has double the life of any hollow one. The No. 3 Grinder shown in illustration, besides being intended for cutter and tool grinding, has water supply and automatic table traverse for cylindrical grinding. The No. 2 Grinder is without these features, being for sharpening operations only. Both are well protected from emery dust, have automatic lubrication and a host of other advantages that have lifted tool room grinding to a new level of efficiency and profit.



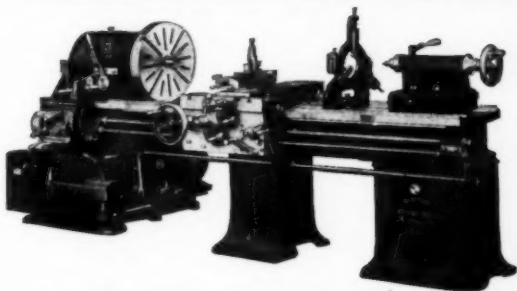
Send for new booklet illustrating advantages of these machines

The Oesterlein Machine Company
CINCINNATI, OHIO

OESTERLEIN
OHIO
MILLING
GRINDING DRILLING
EQUIPMENT

BRADFORD

"All Geared" LATHES



A Guarantee of Low Turning Costs

WHETHER you wish to turn a few pieces or a thousand, the job will show a profit when you use a BRADFORD. It not only has the productive capacity for profitable manufacturing, but a rigidity and resistance to spring that enables it to hold close limits while taking the heaviest cuts. Use modern cutting tools without danger of chatter or vibration. Made in sizes from 14" to 48" in both cone and geared types.

Write for Illustrated Folder

Bradford Unit Type Drilling and Tapping Heads



Self-contained, motor drive units, designed for one or more heads to be built into one unit *at any angle from horizontal to vertical*. Spindle speeds from 75 to 2000 R. P. M. For single or multiple spindle drilling and tapping.

Illustrated Folder on Request

The Bradford Machine Tool Co.

Precision Lathe Builders Since 1840

657-671 Evans Street,

Cincinnati, Ohio

The Open-Side Becomes A General Utility Machine Tool

CLEVELAND OPEN SIDE PLANER

From a special application machine to a general all purpose planer sums up in a few words the broad acceptance this machine has in its field. Rigidity and adaptability for any job has come thru wide application and a thoroughly tried and proved machine on difficult work. Get all the facts. Write for complete data. No obligation.

THE CLEVELAND PLANER COMPANY

Established 1900

3148 Superior Ave., Cleveland, Ohio

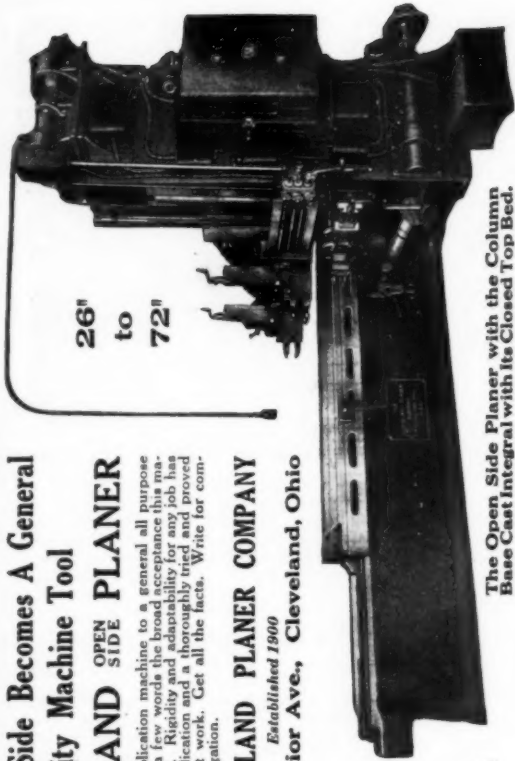
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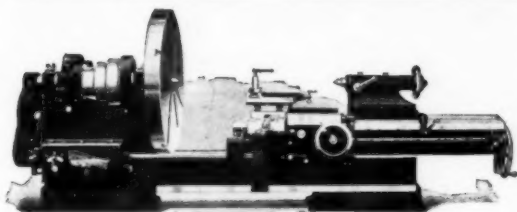
1100

Installations

26"
to
72"



The Open Side Planer with the Column
Base Cast Integral with Its Closed Top Bed.



SERIES G 22/40, 24/48 and 28/50 EXTENSION BED GAP LATHE

A modern lathe suitable for a large range and variety of work; in fact, there is really no limit within reason to the work that can be done on this type of gap lathe. A lathe at all times ready for any job, large or small.

Especially Adapted For:

**Coal Mines, Railroad Shops, Steel Mills,
Public Service Corporations, Shipbuilding
Yards, Paper Mills, Oil Refineries
and all Shops where General Repair
Work is Being Done.**

Furnished in belt driven or motor driven type
with all geared drive head.

Weight of 10' Lathe—8500 lbs.

Write for Prices and Information

The RAHN-LARMON CO.
2943 Spring Grove Ave., Cincinnati, Ohio

NUT SLOTTING MACHINE



No. 2

Produces 3000 completely slotted nuts an hour without burrs.

Hexagon sizes: $\frac{3}{8}$, $\frac{7}{16}$, $\frac{1}{2}$, $\frac{9}{16}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, $\frac{15}{16}$.

No. 3 Machine used for large nuts.

Detailed Description Mailed on Request

PELLOW MACHINE COMPANY
6527 Epworth Blvd., Detroit, Mich.

Save Time and Taps

with a

GRAND RAPIDS TAP GRINDER



No. 12

**Capacity
No. 6 to 3"
Taps**

TESTS have proven that taps ground on a Grand Rapids Tap Grinder will cut with *less than half the power* required for hand ground taps—even when hand grinding is done by the very best mechanics. The elimination of that double strain saves many taps from the scrap heap. And tests also show that taps ground on this machine stay sharp for *several times as long* as the hand ground ones.

Wouldn't You Like To—

Eliminate the breakage arising from imperfect grinding—Save the waste which results from excessive and too frequent grinding—Have your taps cut with about half the power usually required—Save half the time now spent in tap grinding—Have your taps stay sharp over twice as long—Eliminate torn and stripped threads—Have your tapped holes and threads just right—Then use the *Grand Rapids!*

An illustrated booklet giving complete details and information that will save you many dollars each year on tapping is yours for the asking

GALLMEYER AND LIVINGSTON CO.

342 Straight Ave., S. W.,

Grand Rapids, Mich.



A NEW Surface Grinder

**The
"American"
No. 2
Automatic**

Meeting TODAY'S Demands

The "American" No. 2 Automatic Surface Grinder is a thoroughly new type, designed to meet the changed conditions and demands of modern shop practice. Of unusually heavy design, it is ideal for grinding and finishing dies, punches, gauges and work of similar nature.

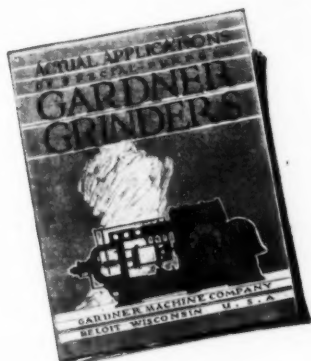
Its general construction, consisting of new and original features, makes it unequalled as a rapid work producer. Rigid box construction encloses all belts, assuring safety without unsightly guards. All slides and working surfaces are covered, protecting them from dirt and grit. Working parts are easily accessible.

Send for circular describing the many features in detail

American Machine Tool Co.

HACKETTSTOWN, N. J., U. S. A.

Get *YOUR* Copy!!



Here's a **NEW, ENLARGED** edition of a booklet full of practical grinding data.

TEAR OUT THIS PAGE and MAIL IT!
No Obligation, Whatever.

Name..... Title.....

Firm

Address

City..... State.....

Gardner Machine Company
Near Wheeler Ave., Beloit Wis., U. S. A.

Threading 1200 pieces per Hour

These brass wing
screws shown are
being threaded on
our



Standard High Speed Tapping Machine



*Let us show you what can
be done on your work*

Leland-Gifford Company, - Worcester, Mass., U.S.A.

BRANCHES

BOSTON CHICAGO CLEVELAND
DETROIT NEW YORK
PITTSBURGH ROCHESTER

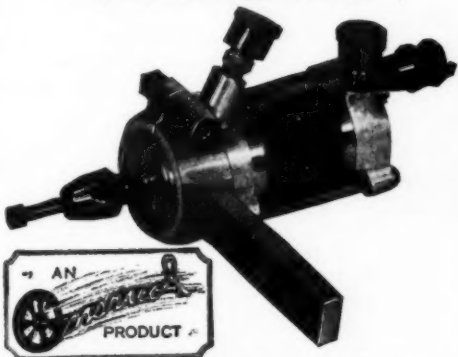
AGENTS

Hendrie & Bolthoff	Denver
F. E. Satterlee Company	Minneapolis
Smith Booth Usher Co.,	Los Angeles
Herberts-Moore Machinery Co.,	San Francisco
F. F. Barber Machinery Co.	Toronto

LELAND - GIFFORD

A 60,000 r. p. m. GRINDER

that reduces lapping to
precision grinding



C-2, 60,000 R. P. M. Pneumatic Turbine

This 60,000 r. p. m. grinder with tool post holder is also mounted to internal machines. It has the proper speed to give wheels of very small diameter their maximum cutting capacity and produces work of extreme accuracy. Slow lapping operations are often eliminated by the exceptional trueness and accuracy of this unit.

Onsrud Pneumatic Turbines constitute the Ideal High Speed Drive—their principle involves no other wearing parts but bearings. These are kept cold by the exhaust air expanding within the turbine, which contributes to their unusually long life. The construction of the unit is a natural protection against dust and grit entering the bearings.

Onsrud Pneumatic Turbines are built in sizes having speeds from 15,000 to 60,000 r. p. m. They have a wide range of utility and in addition to being used as grinders, have solved many grinding, buffing and polishing problems. *Write for bulletins.*

Onsrud Machine Works, Inc.
3906 Palmer St., Chicago, Ill.

Illinois Plain and Surface Grinder

No.
11

With Hand
Feed Table
and
Cross Slide



Send for specifications of our No. 10 Plain and Surface Grinder—a general purpose grinder.

This machine has been designed to meet the demand of shops requiring an inexpensive grinder for surface grinding.

Special Features

Base: Box type construction with liberal bearing surface for knee, insuring accuracy.

Knee: Supported by elevating screw having ball thrust bearing. Hand wheel graduated in thousandths. Long bearing on column.

Spindle: Made of High Carbon Steel, heat treated, and runs in four Timken tapered roller bearings with adjustment collars to each

bearing. Also furnished with Bronze Bearings if desired.

Table and Cross Slide: Have dovetailed ways and tapered gibs. Table working surface 24"x6".

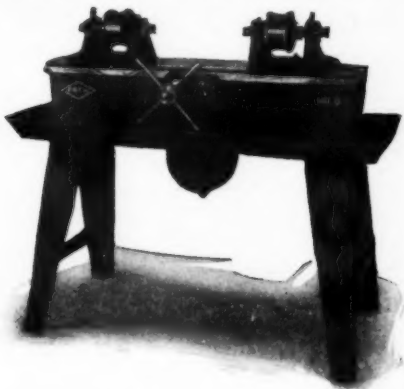
Countershaft: Ball bearing with tight and loose pulley and belt shifting device. Loose pulley equipped with two ball bearings.

Lubrication: Alemite system for spindle and countershaft.

Write for Complete Specifications and Prices

Illinois Machine & Mfg. Co.
LaSalle, Illinois

SPEEDY-ACCURATE



FREW No. 0 Duplex Horizontal Drill

DRILLING, counterboring, turning and hollow boring are some of the operations this machine performs in record time. Facing can be done in practically half the time required by single spindle methods and in perfect alignment. The FREW simultaneously machines work from opposite directions on the same axis. Numerous types of fixtures can be mounted on the bed to be operated by air, hand clamp or foot treadle spring type.

Look at these Features !

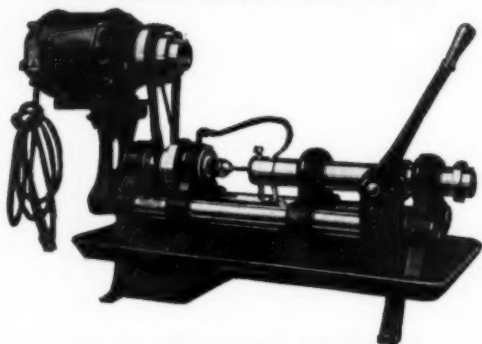
Timken tapered roller bearings or ball bearings; stops regulating depth to which tool goes; felt wipers for clearing chips; various methods of providing motion to heads, belt or individual motor drive, etc.

Write for Complete Description and Low Price

THE FREW MACHINE CO.
136 West Venango St., PHILADELPHIA, PA.

*We also manufacture: Tapping Machines, Profiling Machines,
Cam Milling Machines, Wood Working and Special Machines.*

Production Drilling Increased 50 to 100%



WHIRLWIND Horizontal Drilling Machines

YOU will be surprised to see how much faster you can do production drilling on a WHIRLWIND. Its HORIZONTAL construction permits faster loading and the finished work is automatically ejected. Shops using it, the country over, have increased their production from 50 to 100% over vertical drill press methods.

Quickly Pays for Itself

The first cost of a WHIRLWIND is so low that the increased production quickly pays for it. Operating expense is lowered too, as drill breakage and resharpening are reduced to a minimum. The machine is substantially built and unconditionally guaranteed.

Send one of your drilling problems to us and we'll tell you how many pieces per hour the WHIRLWIND will drill—no obligation.

WHIRLWIND PRODUCTS CO.
1737 Ludlow Ave., Indianapolis, Ind.

Production Accuracy at low operating cost

Precision Built Drilling Units



TIMKEN
ROLLER
BEARINGS

Ready for
the Job!

15-inch Sliding Head Sensitive Drill

Mounted on Box Type
Column with
Oil Groove Table

Spindle Speeds—
400, 850, 1750 R. P. M.

Capacity 0 to $\frac{1}{2}$ ".

This drill can be furnished
in speeds ranging from
400 to 10,000 R. P. M.

SPECIFICATIONS—1 Spindle

Overhang.....	7½"
Vertical adjustment of sliding head.....	9½"
Traverse of feed rack.....	3½"
Center of spindle to column at gap.....	8½"
Center of spindle to planed column face.....	7½"
Distance between spindle centers.....	
Size of Table.....	16"x20"
Size of base of lower column.....	23"x18"
Maximum Distance from spindle to table.....	33"
Width of table bearing on column.....	4"
Height to upper edge of top bearing cap.....	73"
Net wt. mounted on base and pedestal.....	505 lbs.
Crated weight.....	613 lbs.

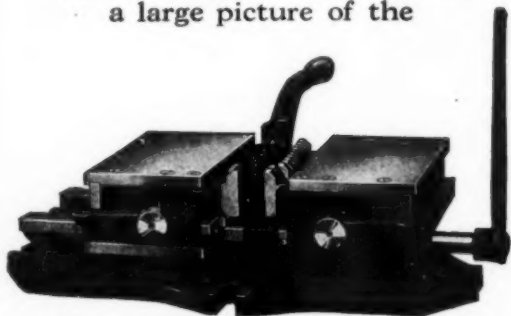
Consult Our Engineering Department on Your
Drilling Problems whether Regular or Special

Canedy-Otto Manufacturing Company

Main Offices and Factory—Chicago Heights, Illinois

ONE LOOK AT A GOOD PICTURE TELLS MORE THAN WORDS

We will be glad to GIVE YOU
a large picture of the



Berjo

Machine and Bench Vise

that shows how simple and effective its gripping action is.

IT GRIPS THOROLY ANY IRREGULAR SHAPE.

GET THE PICTURE . . . WRITE NOW.

The Avey Drilling Machine Co.
CINCINNATI, OHIO

\$

GET
THE
Avey

\$

WATCH
YOUR
OUTPUT
INCREASE



WATCH
YOUR
PROFIT
GROW

\$

THE AVEY DRILLING
MACHINE CO.
CINCINNATI
OHIO

\$

THE SMALLEST, FASTEST,

The KIPP AIR GRINDER

EVERY machinist, every tool maker, every die maker—in fact, everybody who works with metal in irregular shapes—will want one of these new tools on his bench.

Mile-A-Minute Speed

It's a little, high speed grinder, not much bigger than your finger, only $7\frac{1}{4}$ inches long. It handles as easily as a fountain pen. But it travels at a mile-a-minute speed with a half-inch wheel. And it really grinds instead of just rubbing.



Works on Shop Air-Pressure

It touches off tool steel as neatly, smoothly and rapidly as a big wheel grinder. It gets into the inaccessible places to blend radii. It does in minutes work that otherwise requires hours of stoning on parts that require touching-up after hardening. And all it needs is ordinary shop air pressure. Specify Model AG for pressures 50 to 100 pounds. Specify model AGL for pressures 20 to 50 pounds.

air
Kipp  **Grinder**

HANDIEST GRINDER....

an absolutely **NEW TOOL**

It's an absolutely new tool—you've never seen anything like it. It doesn't seem possible that any small grinder could be built to run so smoothly, so swiftly, so quietly, yet with plenty of power to hold its speed while grinding.

1/2 Actual Size

Price
\$25.00
Complete

You'll never believe it till you see it. That's why we're offering it on a ten day free trial basis to all firms with a satisfactory credit rating. It is priced at \$25.00 complete, with four grinding wheels, hose and connections. Clip the order blank below and attach to your business stationery, or use your order blank.

MADISON-KIPP CORPORATION
217 Waubesa Street MADISON, WIS.
GRINDER DIVISION

Manufacturers of Air Grinders, Fresh Oil Systems, Mechanical Lubricators, Die Casting Machines, Die Casting Dies.

ORDER BLANK

MADISON-KIPP CORPORATION
217 Waubesa Street, Madison, Wisconsin

Order No.

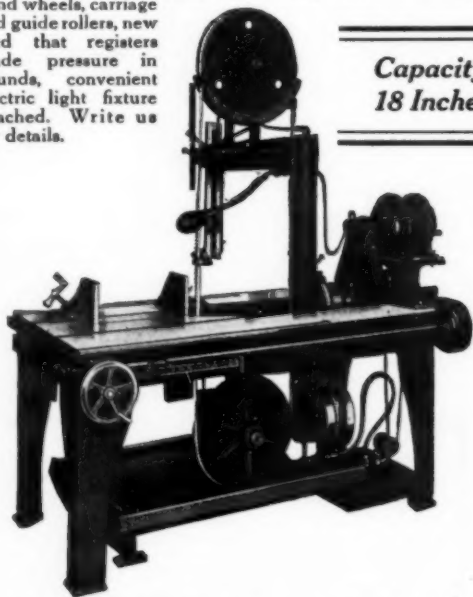
Send one Kipp Air Grinder at \$25.00, net 30 days, postpaid. If it is not satisfactory we will return invoice and grinder on or before the 10th day after date of invoice. [Note: If you prefer to use your regular order form please attach this coupon to it and copy the above return arrangement on your order for a complete record.]

Ship to.....Address.....
City.....State.....
Signed.....Title.....

MARVEL

The Marvel No. 8 Metal Band Saw is a standard tool in hundreds of the best shops. It cuts off square or any angle right or left to 45 degrees, has big roomy bed or work table, three cutting speeds, quick acting vise, ball bearing band wheels, carriage and guide rollers, new feed that registers blade pressure in pounds, convenient electric light fixture attached. Write us for details.

*Capacity
18 Inches*



ARMSTRONG - BLUM

341 N. Francisco Ave.,

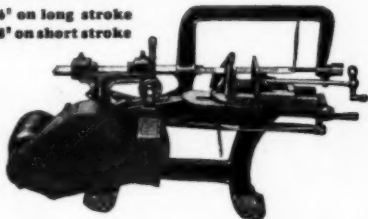
MARVEL

Draw-Cut Hack Saw No. 2

Adjustable Stroke

CAPACITY { 6'x6' on long stroke
8'x8' on short stroke

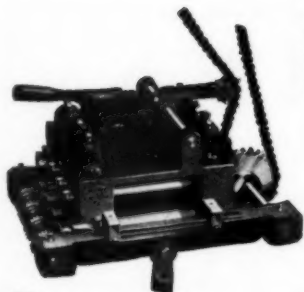
**With
Swivel
Vise**



A Complete Motor Driven Hack Saw at a very attractive price. It's a Strong, Durable, Dependable Saw, and can be furnished either with motor for power circuit for stationary use or with motor for lighting circuit so it can run from any light socket in your shop. Motor is connected with driving shaft by silent chain, sprockets, and intermediate cut gears enclosed in cast iron housing and guard and run in oil. Write us. Let us know the current of your power circuit, or lighting circuit. Get the full details from us of this Complete Motor Driven Saw. Can also be furnished Belt Driven.

ASK ABOUT MARVEL
High-Speed-Edge Hack Saw Blades

MANUFACTURING CO.
CHICAGO, ILLINOIS



These feeds are made in six models, with or without built-in straightener for light or heavy stocks, to meet all conditions.

**Fast
Accurate
Economical**

NOC-OUT

ROLL FEEDS

Why use slow, costly hand feed methods when the NOC-OUT Reversible Feed offers you the many advantages of automatic feeding? It keeps production at a steady level, assures maximum output of each press—by eliminating the human element and its costly delays.

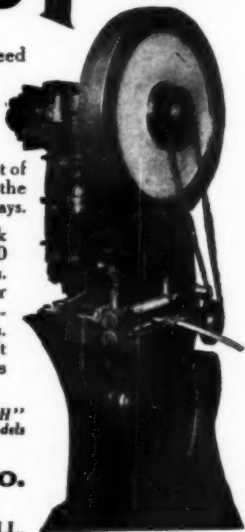
Automatically feeds any stock from coils in lengths of from 0 to 30 inches per stroke of press. Mounts on bolster plate, either right side, left side or front, requires no alteration of press. Feeds from right to left, left to right, or front to back as conditions may require.

Write TODAY for a copy of Bulletin "H" describing the various NOC-OUT Models and Our Free Trial Offer.

Wittek Mfg. Co.

4309 W. 24th Place

Dept. "H" CHICAGO, ILL.



FOOTBURT



A Single Spindle Footburt Sipp Sensitive Drill

**Made in three
sizes of single
and multiple
spindle models**

More holes with this machine

Why? Because you can change speeds in two seconds or belts in ten seconds—because the automatic idlers keep the belt pulling to capacity at all times—because the full ball bearing equipment and accurate machining gives a smooth, fast cut.

Write for No. 650 Folders

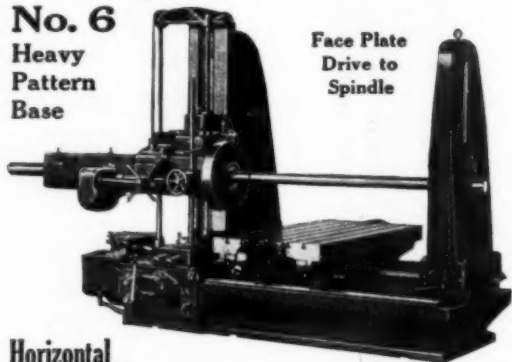
The Foote-Burt Company, Cleveland, O.

FOOTBURT

The New Improved **DEFIANCE**

No. 6
Heavy
Pattern
Base

Face Plate
Drive to
Spindle



Horizontal **Boring, Milling, Drilling and Tapping Machine**

The Defiance Line of Horizontal Boring Mills embodies many special features including independent rapid traverse to head and platen in all directions, moving 84" per minute; thoroughly enclosed head; forced feed lubrication; centralized control; unit construction of head, feed and speed boxes, and many more efficient aids to production. Simplicity, great strength and ample power enable you to handle a wide range of work with profit.

Write for the descriptive folder, or for the complete Catalog of "The Defiance Line" of Cylinder Boring Machines, Heavy Service Drilling Machines, Rail Drills, Horizontal and Vertical Multiple Drilling Machines, Multiple Tapping Machines and Valve Grinding Machines.

The Defiance Machine Works **Defiance, Ohio**

**Designers and Builders of Precision-Production Machine Tools and
Special Woodworking Machinery**

The **LEHMANN**

An EXCEPTIONAL Engine Lathe



*"Built for
Endurance"*

For HEAVY DUTY and ACCURACY

LEHMANN LATHES are recognized as exceptional in design, construction and performance—meeting a wide variety of requirements and giving splendid service. Their design includes essential points prescribed by modern shop practice, together with many features of our own. These features are not radical departures, but modifications and practical applications of time-tried devices, adding to effectiveness and ease of manipulation. Every lathe that leaves our shop is thoroughly tested and guaranteed.

A Brief Outline of Some of The Features:

16 Speed Headstock: Running in oil—simplicity of construction—only 10 gears required—all gears heat-treated or hardened—all shafts, except spindle, mounted on ball bearings.

Spindle: Alloy steel—hardened and ground—patented double spindle nose.

Carriage: Wide deep bridge—wipers and oil reservoir for ways.

Tailstock Spindle: has improved locking device.

Bed: Deep and wide—braced by large cross-ribs—chilled ways.

Apron Control of Clutch: for forward and reverse—similar handle at headstock end.

Apron: Double plate type—removable front plate—central oiling system.

Rod and Screw Shift: Positive and safe.

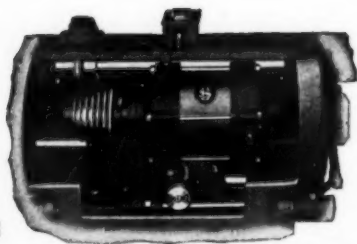
Patented and Quick Change: Wide range—central oiling system.

Improved Friction Clutch: Forward and reverse—running in oil—self adjusting.

Geared Head and Cone Head—Double Back Geared
Made in Sizes from 16" to 24"

WRITE for the Illustrated Catalog TODAY

LEHMANN MACHINE CO.
3571 CHOUTEAU AVE., ST. LOUIS, MO.



This

Splendid Drive

Obtainable Only in U. S.

Buffers and Grinders

THE wonderful, new advantages of buffing, polishing or grinding by means of the Gibbs V-Disc Transmission of GRAPHITIZED MICARTA are possible only with machines made by The United States Electrical Tool Co.—this feature is patented, (No. 1,477,052.)

In buffing and polishing, four different wheel speeds from 2,000 to 3,000 r. p. m. are available. In grinding, you can maintain a constant wheel surface speed regardless of wheel wear, clear down

to the flanges. In high speed snagging with high speed or vitrified wheels, you can hold to a speed of approximately 9,000 surface feet per minute.

These machines have the further advantage of operating on alternating current. In addition, the absence of slip or backlash with this drive, its convenience, the simplicity and negligible cost of replacement, the high efficiency, quiet operation and ability to withstand hard usage make this drive highly successful.



Ask your jobber or write us today

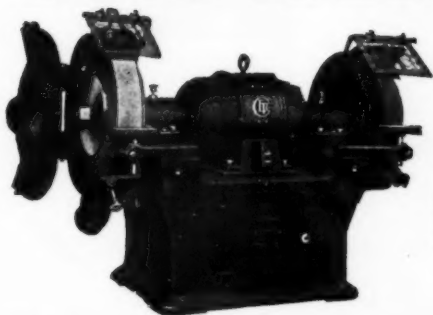
The United States Electrical Tool Co.

Oldest Builders of Electric Drills and Grinders in the World

2461 West Sixth Street, Cincinnati, Ohio, U. S. A.

Canadian Division—MAPLE LEAF ELECTRIC TOOLS, Ltd.—Toronto

The Cincinnati **HIGH SPEED**



Three sizes
5, 7½ and
10 H. P.

Heavy Duty—Roller Bearing FLOOR GRINDER

THIS Grinder fills a profitable corner in any shop where production demands call for speedy, accurate, clean cut work. You can be sure of dependable performance every day that this grinder is on the job—100% satisfaction when the job is done. It *belongs* in your shop.

BUILDERS OF:

**Ball Bearing
Electric Drills
Screw Drivers
Nut Setters
Tappers
Valve Grinders
Tool Post Grinders
Floor Buffers
Bench and
Floor Grinders**

Cost Saving Features:

Built to carry ring wheels, 12 inch bore, effecting a big saving on initial cost as well as on discarded wheel losses. Timken Tapered Roller Bearings protected from grit and adjustable to wear—approved by the Timken Co.; adjustable wheel guards, eye shields, push button control—these and many other features are yours in THE CINCINNATI.

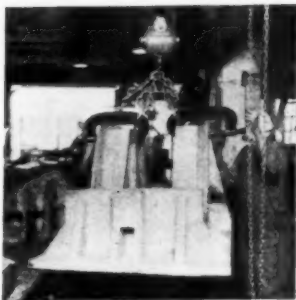
Write for Catalog and Complete Details

**THE CINCINNATI
ELECTRICAL TOOL CO.**
2700 Madison Road, Cincinnati, Ohio

**You can count on a tool that bears the
ARM-AND-HAMMER TRADE MARK**



**Dependable
under the
greatest
strains**



ARMSTRONG "C" Clamps have almost unbelievable strength. They are shown here in a Toledo plant where they are used to lift and carry tremendous steel castings—automobile body dies. Day after day they stand up under this terrific strain. The slightest give, the least spread, under this tremendous pull would spell disaster. It is because ARMSTRONG Clamps will not give or spread that they are selected for this work. They can be depended on—always.



**ARMSTRONG
"C" CLAMPS**

Forged from steel that gives extra stiffness and strength. Alloy Steel screws. All practical types and sizes.

Write today for Catalog B-27 which shows, describes and gives prices of all ARMSTRONG Tools.

**ARMSTRONG
BROS. TOOL CO.**

"The Tool Holder People"

324 N. Francisco Ave. Chicago, U. S. A.

ARMSTRONG
TRADE MARK REG. IN U.S. PAT. OFFICE

Taylor & Fenn Belt Driven
No. 12 Spring Press



**UNIFORM BLOW
SPRING PRESSES**

Are made in
three sizes,
with either
single or
double action

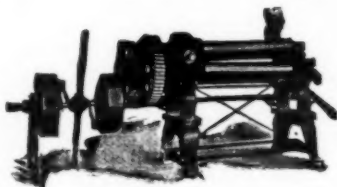
Our No. 12 Belt Driven Spring Press, illustrated above, has a stroke of $3\frac{1}{4}$ inches. The foot treadle operates a safety clutch attached to the flywheel, which automatically stops the machine after each stroke regardless of whether the treadle is released or held down by the operator. The clutch can be adjusted for a continuous stroke if desired.

Descriptive circular gladly sent upon request

The Taylor & Fenn Co.
Hartford, Conn., U. S. A.

BELOIT

Punches—Shears—Bending Rolls



Initial Type

Sheet and Plate Bending Rolls

These Bending Rolls are built to fill the demand for strong, efficient and quick acting rolls for forming sheets and plates into cylindrical shapes. Adapted to the requirements of sheet metal and light plate working parts, and indispensable in any plant having a metal working department.

The modern design of this type makes it possible for the operator to curve plates completely to the edge, thus getting away from the undesirable flat near the edge of the sheet.

Strong, compact, easy to operate, conservatively rated and amply back geared to require the minimum of power.

Made in Initial Type, as shown above, or in Pyramid Type. We also make various types and styles of Punches and Shears. Write for complete descriptions.

Hendley & Whittemore Co.

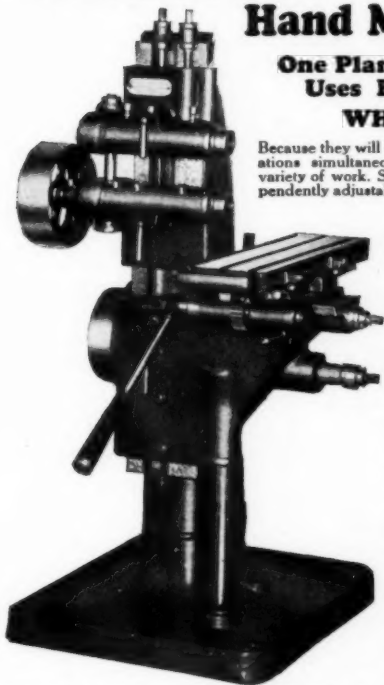
100 S. State St., BELOIT, WIS.

PUNCHES—SHEARS—BENDING ROLLS

"SUPERIOR" Two-Spindle Hand Millers

**One Plant Alone
Uses Fifty—
WHY?**

Because they will handle two operations simultaneously on a great variety of work. Spindles are independently adjustable vertically.



Slides move freely without cramping, since all guiding surfaces are long in proportion to their width. All sliding members are fitted with adjustable gibs, and can be securely clamped without disturbing adjustment.

Especially adapted to cut step-cut piston rings, as it will handle both sides at once; also for splitting crankshafts and connecting rod bearings, both sides of which are also handled at once. Many "Superiors" are at work on such operations.

Furnished for direct drive from main shaft (friction countershaft built integral with machine) or for motor drive.

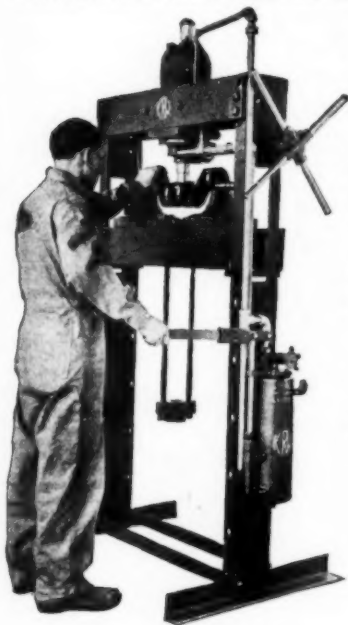
Descriptive Literature Gladly Sent on Request

We are also Designers and Manufacturers of Special Machinery, Tools, Dies, etc., as well as of Experimental and Model Work.

Superior Machine & Engineering Co.
1920 Ferry Park, 1-1 1-1 Detroit, Mich.

KRW Hydraulic and Sensitive ARBOR PRESS NEW 1930 MODEL

Many New Improvements for Perfection of Operation and
Convenience Gives You All Around Efficiency at Low Cost



A new double acting piston fills cylinder with oil as the ram is brought down by means of the hand wheel of unique design — sliding handles which pull out to the ends greatly increase the leverage.

Side members slotted to permit long bars to pass thru.

35 tons Capacity

Direct to You

\$115.00

F. O. B. Factory

Complete with all
attachments as shown

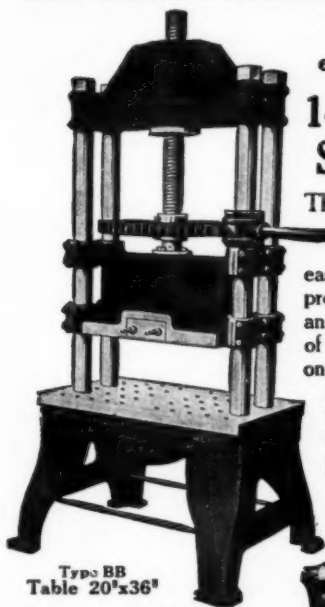
K. R. WILSON

10-14 Lock St., BUFFALO, N. Y., U. S. A.

K. R. Wilson Shop Equipment Sales Co., Los Angeles, California

Export Department: 126 Liberty St., New York City

One Man Handles All Dies



Type BB
Table 20"x36"

When you are
equipped with a

1-Man 4-Post Screw Press

The perfect alignment
between punch
and die — the
ease with which 80 tons
pressure can be applied
and the supreme rigidity
of this machine, enable
one man to do more, bet-
ter and speedier work
than two men can do
on any other type of
press.

*Made in 25 ton
size also*

Surface Grinder

A substantially built machine
that is powerful, rigid and accurate.
Equipped with graduated dials and
non-vibrating wheel.

Details and Prices on request

**JARECKI MACHINE
AND TOOL CO.**

Department A
GRAND RAPIDS, MICHIGAN





Here's The Key...

to the solution of the small machine shop's coolant problems — a complete unit, including pump, motor and four-gallon reservoir. Also obtainable with eleven gallon tank on casters. For particulars see the 1930 Catalog of GUSHER Coolant Pumps.

THE RUTHMAN MACHINERY COMPANY

**528 East Front Street
Cincinnati, Ohio**



A NEW PRESS

for the
Machine Shop
and
Tool Room

Made in
two sizes
21" and 33"

Low in
Price.

40 tons pressure

**Makes all Bending, Forcing and
Straightening Jobs Easy**

Quickly pays for itself in time saved.

Ideal for shearing punches in hardened
dies and for trying out Blanking,
Piercing and Bending Dies.

*Mail coupon for bulletin describing
what its 80,000 lbs. pressure will do*

**SIMPLEX
TOOL CO.**

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**SIMPLEX
TOOL CO.**

Woonsocket, R. I.

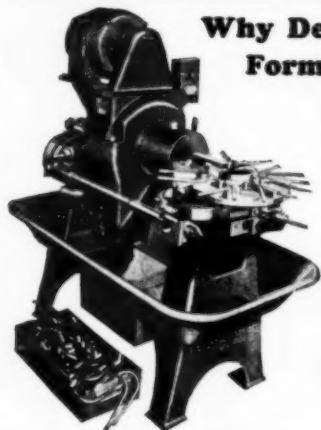
Send bulletin describing
your press and showing uses to

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ADDRESS.....

CITY..... STATE.....



**Why Delay Drilling,
Forming, Milling
and similar
Automatic
Operations
when
You Can
Thread the
Work
FASTER
on the**

RICKERT-SHAFER Automatic Threading Machine

THREADING is an operation requiring care and skill and cannot be rushed. Also, it is usually the longest operation on an automatic job. Because of this, R.-S. Automatic Threading Machines have helped many plants to make their automatics more profitable, and lowered cost per piece, by taking this operation over.

IF YOU are not thoroughly acquainted with the possibilities of this remarkable little machine, it will pay you to investigate.

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RICKERT-SHAFER CO., Erie, Pa.

THE HAMMOND AUTOMATIC
Tapping Machines are designed
to rapidly and efficiently perform
drilling, tapping, stud, nut and screw
driving operations.



Drilling radius.....4' 0"
Capacity $\frac{3}{4}$ " drills, $\frac{5}{8}$ " taps, $\frac{1}{2}$ " studs

Write for full information

The Hammond Manufacturing Co.
7808 Kinsman Road, Cleveland, Ohio

KVE

KVE

*The*

KELLERFLEX

A Flexible Shaft Machine of a Hundred Uses.

Made in various sizes and types to meet every requirement. Speeds from 875 to 10,500 R. P. M.

For Snagging, Burring, Lapping, Buffing, Polishing, Sanding, Drilling, Wire-Brushing, etc.

Non-Heating Shaft, Ball-Bearing Band-piece, Ball Bearing Motor, Universal Swivel.

Complete line of accessories: Rotary Files, Sanding Drums, Emery Wheels, Wire Brushes, Polishers, etc.

KELLER MECHANICAL ENGINEERING CORP.
 58A Washington St., Brooklyn, N. Y.

STOCKS AT

Brooklyn Cleveland Detroit Chicago St. Louis San Francisco
Builders of the Keller Automatic Die Cutting Machines
 Chicago Office: 549 West Washington Blvd., Chicago, Ill., Telephone Central 1590

SAVE
\$ \$ \$ \$ \$ \$

By Using The
Luers Cutting-Off Tool

This tool is made in a great many sizes and types adapted for use on all makes of automatic screw machines, hand screw machines, and turret lathes. It pays for itself over and over again, and is being used by a great many outstanding concerns.

Will you try one in actual practice? No obligation whatever. Just designate the size and make of machine on which you wish to try our tool and the proper type will be sent to you.

*Patented and Patents Pending In
United States and Foreign Countries.*

LUERS INCORPORATED
1022 Maple St., Detroit, Mich.

Etchograph

Trade Mark



Patented July 8, 1918
Patent No. 1,300,100

Cut Tool Marking Time 80%

For marking iron, steel or steelite, nothing can equal the ETCHOGRAPH—the original electric marker. Six stages of heat allow six variations in the size of marking, an advantage no other machine can offer. No acids—no fuss—simple to operate—just connect to light socket and write as with a pencil.

Write for descriptive folder, stating power available.

William Brewster Company
50 Church St., New York

The BULL DOG

"The Drill with a BITE"

**New Model—
New Features—
16 of Them!**

**Write for Full
Details**

Won't
Stall—
Break—
Pull Loose



This new improved 1930 Model Drill, with SKF ball-bearings designed for rough usage, is the finest tool ever built—in fact, it's so good it's unconditionally guaranteed for a year.

1/2"
**Heavy
Duty**
Only
\$48

**WEEK'S
TRIAL
OFFER**

Give it a slam-bang, rough-house test for a week on the toughest job you can find. Watch it go through iron 2" per minute—through tough oak 5" thick in 30 seconds. If your dealer cannot supply—write direct to us at address below.

National Electric Products Co.

Dept. H.

148 Baxter St., New York, N. Y.

—ABBOTT—



Profit or Loss?

Which does your finishing department mean to you?

In either case the advantages of the Abbott Ball Burnishing Process will be quickly realized for it is the most economical method known of finishing small metal parts.

Thousands of pieces can be finished at one time, and whether yours is a large production or small the advantages are the same—good results—low cost.

Why not investigate to-day and be in a position to make a profit on to-morrow's business. Send samples of your work for an experimental burnish.

The Abbott Ball Company

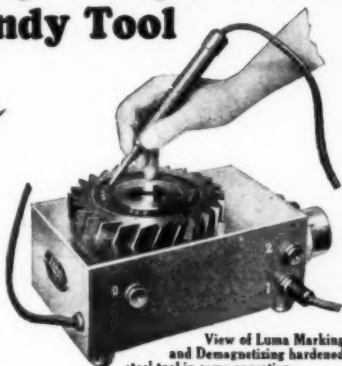
"Originators of Commercial Ball Burnishing"

1043 New Britain Ave., Hartford, Conn.

Save Time and Money in Many Ways with this Handy Tool

Luma
ELECTRIC EQUIPMENT CO.
TOLEDO, OHIO

3
Tools
in
1



View of Luma Marking
and Demagnetizing hardened
steel tool in same operation.

Etches—Demagnetizes—Anneals

The LUMA is an instrument of general utility that is real shop economy, combining as it does in one compact, handy, portable tool, an electric pencil for marking hardened and ground steel, a thorough demagnetizer and a carbon point for light annealing and soldering.

It can be used for marking and demagnetizing small tools simultaneously. For demagnetizing tools or blocks too heavy to be moved, the LUMA itself can be carried and passed about the work as it weighs less than 20 pounds. Easy to use—just plug in the nearest light socket. You will be surprised at the savings it accomplishes for you.

*Write for Complete Information and Details of
Our Five Day Free Trial Offer*

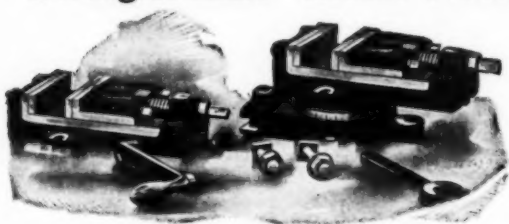
Luma Electric Equipment Co.

Main P. O. Box No. 132

Dept. H.

TOLEDO, OHIO

"Straight Line" Milling Vises

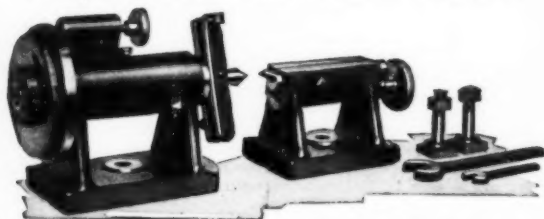


**Swivels 180° Either in a Horizontal or Vertical Plane.
STRONG—DURABLE—ACCURATE**

Made in Four Sizes

Ordered repeatedly by leading machine tool users for accurate heavy duty milling. Interchangeable parts.

Adjustable Dial Index Center



With work dogged between centers, and latch pin in, the dial can be turned to bring work in position where wanted as to relation with machine cutter or emery wheel, then bound to start indexing from such setting. Regular dial is drilled for three and four stations. Can be used for re-cutting or grinding flutes in taps and reamers or teeth in cutters.

Also Manufacturers Of

Double end horizontal drills, milling machines and attachments, dividing heads, index centers, single and multiple spindle, hand screw machines, cutter grinders, screw slotters, hand lathes, collet chucks, oval chucks, rotary tables, hex-square milling fixtures.

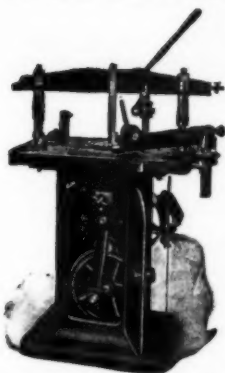
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JOHN B. STEVENS INC.

306 Hudson Street,

NEW YORK CITY

SIMPLICITY and



EASE of OPERATION

**Insure
Accurate
Rapid and
Low Cost
Production
If You Use
the**

No. 1 cuts from 1/16 to 1-inch

DAVIS KEY- SEATER

THE DAVIS KEYSEATER cuts keyways in pulleys, gear blanks, crank handles, etc., and does oil grooving and slotting accurately and economically. Equally profitable on standard quantity production or on mixed runs. There are no complicated parts to get out of order, setting-up is extremely easy and operation is so simple that your youngest apprentice can handle it without any trouble. Made in two sizes.

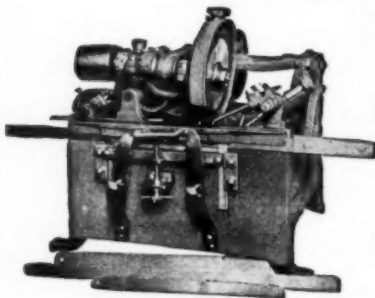
Write for complete description of this productive tool

Davis Keyseater Company
255½ Mill St., Rochester, N. Y., U. S. A.

Salvages HACKS AND HARD TEMPERED METAL CUTTING BANDS

IT COSTS **2¢** To Sharpen A Hack Saw **5¢** A Band Saw

**THIS MACHINE WILL
REDUCE YOUR SAW PURCHASES
OVER 75%**



**MAIL TO US
two saws and
we will
resharpen
them for you
FREE OF
CHARGE
showing the
work this
machine does**

*Write for
Catalog*

THE WARDWELL MFG. CO.

Makers of automatic machines for sharpening—Hack Saws, Hard
Tempered Band Saws, Milling, Slitting and Screw
Slotting Saws and Woodworking Saws

Manufacturers of the largest line of Saw Filers made in U. S. A.

108 Hamilton Ave.,

Cleveland, Ohio

Winterhoff ^{MOTOR} ^{DRIVEN} Portable Tools

For Economical Low Cost Machining of Small Parts

10¹/₂" Sensitive Bench Drill

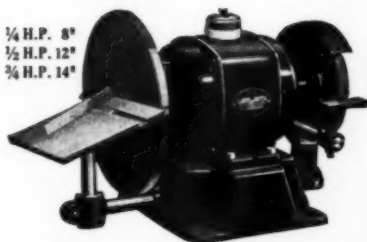


No. 0 JUNIOR DRILL
0 to ³/₈" Capacity

This remarkable little drill has earned a warm spot in the hearts of many production shop as well as tool room foremen. Repeat orders tell the tale. Equipped with General Electric motor, first grade standard chuck, many other exclusive features.

*Send for
Complete Descriptive
Circular*

¹/₄ H.P. 8"
¹/₂ H.P. 12"
³/₄ H.P. 14"



Repulsion Induction Motors

**Double End
Grinders
Double End
Disc Grinders
Combination
Tool & Disc
Grinders**

The most economical and accurate method of producing true surfaces in production and tool room. Discs are two-sided and reversible. Completely equipped for the job. Repeat orders tell the story.

Write Your Dealer or Direct to Us for Information

Winterhoff Tool & Machine Co.
109 South Elkhart Ave., Elkhart, Ind.

ECONOMY—

The J. & B. Filing and

**Production
Demands Effi-
cient Machine
Tools**

**Sawing
Machine**



**Type
1-AP**

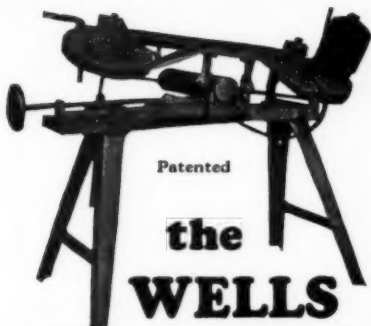
By using unskilled labor for filing that ordinarily would require a skilled mechanic and the fact that it does not require any special make of file or saw blade proves economy in labor and material.

On time in filing it saves as much as 60% and its sawing rate is fully 30% faster than that of other machines.

Details will be gladly sent you upon request showing you just how this machine not only saves you money-but will make money for you. If you write it will be 2¢ well spent.

Manufactured by

The LaPorte Machine & Tool Co., Inc.
LAPORTE, INDIANA



Patented

the **WELLS** metal band saw

Incorporating the advantages of a hack saw with the cutting speed and economies of a band saw.

features:

Self contained and portable if desired—rapid cutting with extreme accuracy—long life blades, low blade expense. A wide range of usefulness—economical operation.

The WELLS SAW cuts soft and hard, ferrous and non-ferrous metals—thick and thin sections—pipe, **tubing**, strips, etc.

No change of blade or speed—cuts high carbon steel then soft brass rapidly and accurately.

Hundreds of duplicate pieces cut with a variation of less than .004".

Saves stock—width of cut less than $\frac{3}{64}$ "—blade .025" thick rigidly supported in six ball bearings.

Durable construction for hard service—strength without excess weight—ball bearing.

A Saw for Production, Maintenance and General Service

We wish you to have descriptive literature—your name and address please—today? Saws will be placed on trial.

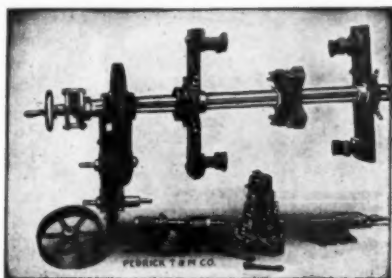
Metal Saw Division

WELLS MANUFACTURING CORP.

Three Rivers, Michigan

Exclusive territory being allotted—representatives and dealers interested, please write.

Pedrick Portable Tools



Portable Cylinder Boring Bars

For reboring in position locomotive cylinders and piston valves, cylinders of stationary engines, steam hammers, air compressors, and a wide range of other work. Often it finishes a job before it could be gotten into the shop, saving time, expense and costly delays. Its saving on work that is difficult to move is out of all proportion to its moderate cost.

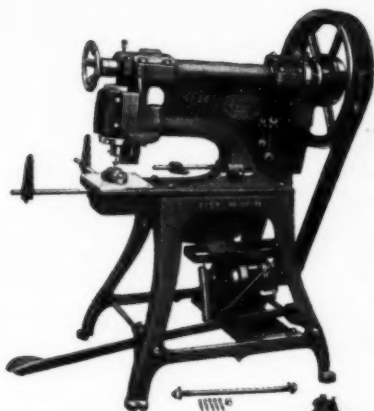
As for durability, we doubt if you can wear out a Pedrick built bar. Many machines we made 25 years ago are still in use.

We also build Floor Type Boring Machines, Crank Pin Turning Machines, Pipe Benders, Portable Milling Machines, etc.

Write for the Catalog today

Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia, Pa.



No. 20

For duplicating work by the use of Horse Shoe Gauges, Templet Sheets can be made to punch sheets with accuracy and speed not obtainable with any other method of punching. Capacity $\frac{1}{4}$ " hole in $\frac{1}{4}$ " iron.

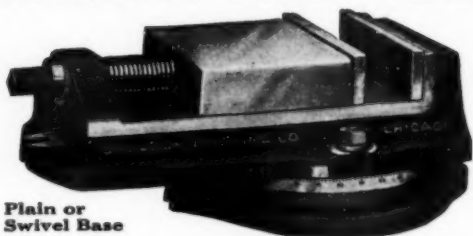
No. 19

Ball Bearing, accurately designed square slide built like a Punch Press for irregular shape dies. Easily operated balanced lever can be moved to the job with ease, saves time, one man machine, capacity $\frac{1}{4}$ " in $\frac{1}{4}$ " iron.



Excelsior Tool & Machine Co.
East St. Louis, Illinois

SHELDON MILLING MACHINE VISES



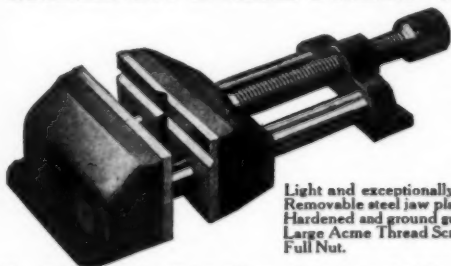
Plain or Swivel Base

The swivel vise is the plain vise with the addition of a circular base, graduated in degrees. It can be removed from the circular base and used as a plain vise if desired.

Specifications and Prices

No.	Width Jaws	Depth Jaws	Jaws Open	Plain Vise		Swivel Vise	
				Weight	Price	Weight	Price
3	3 1/2"	1 3/4"	2 1/4"	15 lbs.	\$16.00	25 lbs.	\$20.00
4	4 1/2"	1 3/4"	3 1/2"	30 lbs.	\$20.00	45 lbs.	\$24.00
6	6 1/2"	2"	4 1/2"	70 lbs.	\$30.00	90 lbs.	\$40.00
8	8 1/2"	2 1/2"	6 1/2"	160 lbs.	\$45.00	225 lbs.	\$60.00

SHELDON DRILL PRESS VISE



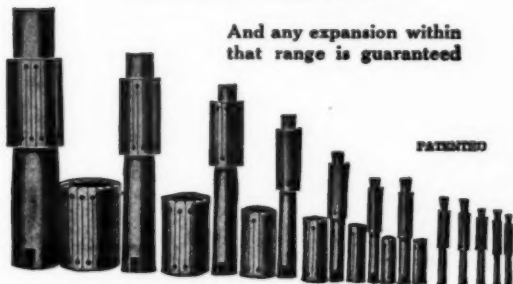
Light and exceptionally strong.
Removable steel jaw plates.
Hardened and ground guide bars.
Large Acme Thread Screw.
Full Nut.

No.	Width of Jaws	Depth of Jaws	Jaws Open	Weight	Price
D-4	4 1/2"	1 1/4"	4"	15 lbs.	\$12.00
D-6	6 1/2"	1 3/4"	6"	35 lbs.	\$18.00
D-9	9"	2 3/8"	9"	70 lbs.	\$24.00

SHELDON MACHINE CO. 3250 Cottage Grove Ave., CHICAGO, ILLINOIS

JUST 1 SET OF 12 Champion Expanding Mandrels

Will fill by thousandths any inside
diameter from $\frac{1}{2}$ " to $6\frac{1}{2}$ "



So Simple—only two parts.

So Handy—always ready for any job.

So Efficient—dependable for precision accuracy.

They are suitable for all classes of work, large or small, in all kinds of metal. They hold work of any length of bore and do not chatter. They are lighter, more easily handled, and keep truer than common mandrels. They release work easily. And the grinding of all parts after hardening insures the greatest accuracy. The cost is only about one-fifth that of solid arbors of equal range graduated by sixteenths.

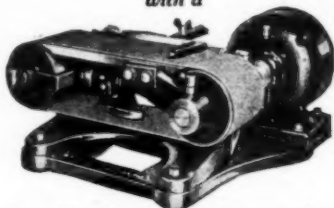
Our Catalog also describes

Champion Tool Holders, Champion Emery Wheel Dressers, Machinists' Vises and Clamps, etc., and our large line of practical, hard-to-beat Shop Furniture. Copy upon request.

The Western Tool & Mfg. Co.
SPRINGFIELD, OHIO

Abolish Expensive Hand Finishing

with a



Simplex-M Abrasive Band Grinder

This Grinder accelerates production and cuts costs. Hand emerying or filing operations are antiquated in comparison. The use of this new modern machine assures straight grain finishes with sharp edges. *Details of this and other styles and sizes on request.*

WALLS SALES CORP., 96 Warren Street
NEW YORK

PEERLESS

**For Flat
Work**



8 Sizes

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PEERLESS SURFACING MACHINE CO., Inc.
TROY, N. Y.

No. 10 Ball Bearing Punch



Capacity $\frac{3}{8}$ " thru $\frac{1}{4}$ " Iron
Weight, 8½ lbs.

No. 8 Roller Bear- ing Punch



Operating handles will not
become disengaged.

CAPACITY— $\frac{1}{4}$ " hole thru $\frac{1}{4}$ "
iron. Weight, 16 lbs.

Made in 3 sizes: Nos. 7, 7½ and 8.

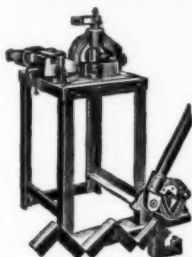
No. 20 Ball Bearing Punch



Capacity, $\frac{1}{2}$ -inch hole
through $\frac{1}{2}$ -inch iron

Weight, Complete
20 lbs.

Angle Iron Combi- nation No. 455



Shears, Notches and Bends
a 2-inch by 2-inch by $\frac{1}{4}$ -
inch Angle Iron in One
Minute Flat.

No. 6 Slitting Shear Roller Bearing



Capacity $\frac{3}{8}$ thickness. Throatless
Drop Forged

Write for Catalog and Price List on Entire Line

Whitney Metal Tool Co.

95 Forbes Street,

Rockford, Illinois

HARDINGE

The Cataract Line



For Supreme Service—

Because they meet the modern demand for superior accuracy and workmanship—ask for catalog

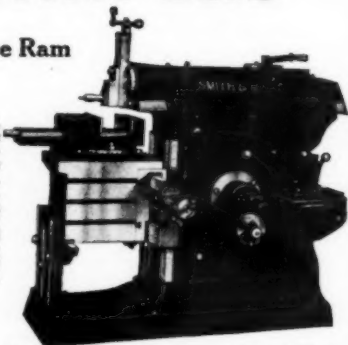
Hardinge Brothers Inc.

4149 Ravenswood Ave. Chicago Ill.

SHAPERS

"V" Type Ram

12", 14", 16",
20", 25" Gear
Box single pul-
ley or motor
drive, also 16",
20", 25" B. G.
cone drive with
belt shifter. 32"
B. G. all geared
single pulley or
motor drive, all
sizes crank type.



The Smith & Mills Co., Cincinnati, O., U.S.A.

12 SPINDLE SPEEDS

Chrome Nickel Steel Gears



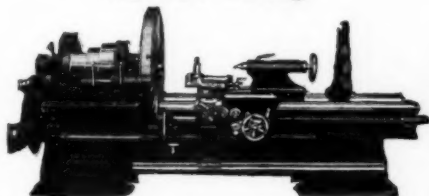
**C. & J. 15/16-inch
Geared Head
Motor Drive Lathe**

ASK FOR FURTHER DETAILS

**Carroll & Jamieson Machine Tool Co.
Batavia, Ohio**

Extension Gap Lathe

24"—46" Swing



Other Sizes from 14" to 72" Swing

**For turning work of large diameter and extra length,
as well as work within their ordinary capacity.**

FAY & SCOTT, Dexter, Maine

MIKRON



**AUTOMATIC
SMALL PRECISION**

Gear Hobbers

Gear Cutters

Pinion Hobbers

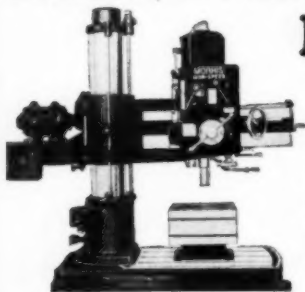
Thread Millers

Hob Grinders

Catalogs On Request

Triplex Machine Tool Corp.
50 Church St., New York City

Morris Mor-Speed Radials



Built in

9-11-13'

Column Diameters

This is the last word in Radial Drill Design. Timken Bearing equipped. All speed and feed changes located in the head. Many other features.

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The Morris Machine Tool Co.
CINCINNATI, OHIO

Represented by The Pratt & Whitney Co. Sales Agencies

Improved Thompson Universal Grinder

Self-contained and motor driven, this standard Grinder combines efficient means for the rapid and accurate production of every grinding operation required in a machine shop.

These machines are now equipped with the new auxiliary coarse cross feed for surface grinding.

Capacity 12"x36"

**The Thompson
Grinder Co.**

1534 West Main St.,
SPRINGFIELD, OHIO



**Savings of
65%
with the**

COLONIAL Broach Sharpener

Actual figures show that it costs 65% more to sharpen broaches on ordinary grinding equipment than on a COLONIAL. Why bear this extra expense? Specially designed for sharpening broaches, the COLONIAL finishes the teeth and under-cut with great accuracy. Quickly pays for itself and improves the quality of your broaching work.

Write for Complete Information.

COLONIAL BROACH COMPANY

147 Jos. Campau Ave.,

Detroit, Mich.

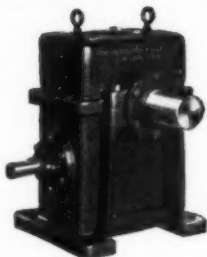
Speed Reducers

1/16 HP up to 200 HP

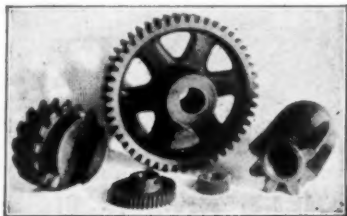
Any ratio you desire in
standard size units.

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We also manufacture a
complete line of in-
dustrial gears.



The Horsburgh & Scott Co.
5112 Hamilton Ave., Cleveland, Ohio



ALL
TYPES



Gears

ALL
MATERIALS

MEDIUM and SMALL SIZES

Massachusetts Gear & Tool Co.
36 Nashua St. Woburn Mass.

GEARS

In Stock—Immediate Delivery

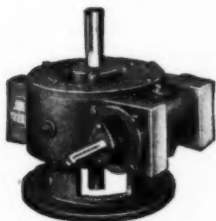


Gears, speed reducers, sprockets, thrust bearings, flexible couplings, pulleys, etc. A complete line is carried in our Chicago stock. Can also quote on special gears of any kind. Send us your blue prints and inquiries.

Write for Catalog No. 70

CHICAGO GEAR WORKS
769-773 W. Jackson Blvd., **CHICAGO, ILL.**

STANDARDIZATION PAYS



SPEED REDUCERS

ALL TYPES
FOR LIGHT AND
HEAVY DUTY IN
STOCK FOR

TYPE V (TIMKEN EQUIPPED)

IMMEDIATE DELIVERY

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BOSTON GEAR WORKS SALES CO.
NORTH QUINCY, MASS.

BOSTON GEARS

Roper Rotary Pumps are EFFICIENT Pumps



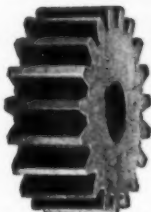
They set new records in pressure pumping for hydraulic power transmission on machine tools, presses, hoists, stokers, accumulators, etc. Strictly high grade—built of the sturdiest materials—fully guaranteed. Sizes and designs to meet individual requirements—can be built in as a part of any machine.

Complete technical and performance details in Catalog No. 58H. Write for copy today—no obligation.

GEO. D. ROPER CORP., Rockford, Ill.

ROPER

■ ■ GEARS BY CROFOOT ■ ■



Good Gears for Every Purpose

We make gears for every purpose—with one purpose always in mind—the efficient handling of the job. You have your choice of a wide range of sizes, from $\frac{1}{8}$ " to 36", in all materials including Formica and Bakelite. A staff of engineers, backed by over 20 years experience, is ready to help you without charge. *Send in your specifications for an estimate.*

Charles E. Crofoot Gear Corp.
70 Central St., South Easton, Mass.

**Drill From 900 to 1400 Holes
per Hour**



with the
DETROIT

**Semi-Automatic
Five Spindle**

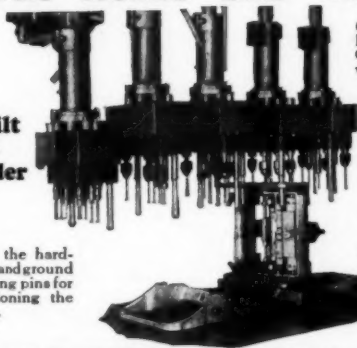
DRILLING MACHINE

This efficient production machine will turn out the work as fast as the operator can feed it stock. A pull of the lever locks or unlocks the fixtures instantly. Capacity No. 60 to $\frac{3}{8}$ " drills. If you are looking for speed, accuracy, simplicity and low cost operation—try the DETROIT!

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Detroit Machine Tool Co.
5061 Woodward Ave., **Detroit, Mich.**

**DORMAN Single & Multiple
Drill Heads and Tappers**



**Built
to
Order**

Note the hardened and ground locating pins for positioning the drills.

(Installation at
L. C. Smith and
Corona Type-
writers, Inc.)

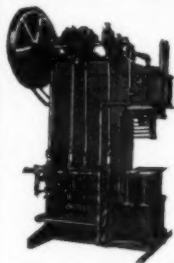
*Send
Blue Prints
or Sketch
for Estimate*

**JOHN H. DORMAN, 5148-52 Hudson Blvd. W.,
WEST NEW YORK, N. J.**

Hydraulic Pressure To Meet Your Specific Need

No matter what your need—whether for straightening, drifting, forming, broaching, etc., Lourie Presses can serve you in any capacity.

Perhaps you are encountering difficulty in forcing that can be accomplished more soundly and economically by hydraulic pressure. New uses for the Lourie Press are being found daily!



Steel Plate Construction

Our Engineering Dep't. welcomes the opportunity to suggest methods of applying hydraulic pressure. Ask for Bulletins 1301-2.

LOURIE MFG. CO., 565 W. Washington
Bldg., CHICAGO

The Spirit Of the Times



is reflected in the speed and stamina of Rockford High Duty Punch Presses.

They are built to produce and maintain Hi-Production—and they do it.

Wide range of sizes and types.

Write today for new catalog

Rockford Iron Works
Rockford, Ill.

It Will Meet Your Needs

U. S. Sensitive 14" Floor Drill

Built to drill holes up to $\frac{1}{2}$ " quickly,
accurately and economically.

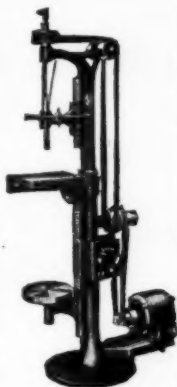
Price with motor,
switch and belts - **\$115**

Or with Counter-
shaft for Belt Drive **\$70**

Steel spindle ground to size, with ball
thrust bearing; vertical adjustment to
head; tables for long and short work;
three speeds, etc. Further information
gladly given upon request.

The U. S. Machine Tool Co.

1952 W. 6th St., Cincinnati, Ohio



U. S. MULTIPLE SPINDLE Drill Heads

Made regularly with 2 to
6 adjustable spindles, to
drill in *any pattern*.
Special heads to order.

Also made with fixed
spindles to fit your work.

Drills two or more holes
with the same speeds
and feeds that are used
for drilling one.

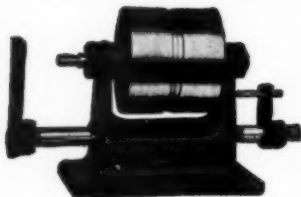
*Send us a layout of your
work and we'll help to
reduce your costs*

The United States Drill Head Co., 1952 W. Sixth St., CINCINNATI, O.

Michigan Agents—National Sales Engineering Corp., Detroit, Mich.

BURKE

Light Tapping at Light Cost



This little machine has a mighty wide capacity—and plenty of speed. Except for the feed and removing of the work it's automatic, and equally efficient on tapping, reaming, burring, countersinking and similar operations. The work is notable for the almost total absence of tap breakage, and the thread is never stripped. A popular machine, economical and dependable on all work.

Prices and details on request.

The Burke Machine Tool Co.
297 E. 16th St., Conneaut, Ohio, U. S. A.

“Buffalo” 10" Jr. Bench Drill

Direct connections to $\frac{1}{4}$ h. p. motor are furnished by this two speed drill. A first class outfit for garages, machine and repair shops.

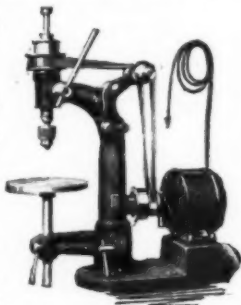
Height of drill, $27\frac{1}{2}$ ".
Drills $\frac{3}{8}$ " holes to center of 10" circle.
Travel of spindle, $3\frac{1}{2}$ ".
Diameter of table, 8".
Size of tight and loose pulleys, $4 \times 1\frac{1}{8}$ ".
Vertical movement of table, 7".
Speed of driving pulleys, 550 R.P.M.

*Circular No. 1647-A
gives full details.*

Buffalo Forge Co.

161 Mortimer St., Buffalo, N. Y.

In Canada; Canadian Blower & Forge
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“Use the MALL Method”



for

**Cleaning
Scraping
Filing
Sanding
Polishing
Grinding
Sawing
Finishing**

**Mall Tools are
powerful tools**

Write for Catalog

Mall Tool Company, 7730 So. Chicago Ave.,
Chicago, Illinois

1/4 H. P. —Type RF-M4



Strand

**It Pays To Buy
THE BEST**

**FLEXIBLE SHAFT
MACHINE**

Type RF-M4

for

Die and Tool Makers

**Are giving excellent results
in hundreds of plants**

**48 PAGE CATALOG
UPON REQUEST**

Machines 1/8" to 2 H. P.

Manufactured By

**N. A. STRAND & CO.
5001-5009 N. Lincoln St.,
CHICAGO**



Production Grinding at Low Cost

Use PORTER - CABLE
Type D-2 Disc Grinders
for removing burrs and
excess metal. These
grinders are sturdy, yet
inexpensive, and can
be conveniently moved
about the plant. Motor
driven from any light or
power line.

Let us show you how others
are cutting costs and increasing
production with PORTER-
CABLE Grinders. Write.

The Porter-Cable Mche. Co.
Salina St., Syracuse, N. Y.



PORTER-CABLE

GRINDERS

⊕3632

Automatic Screw Machine Products

Disc Grinding
Punch Press Work

Broaching
Spot Welding

NEW DAYLIGHT PLANT—MODERN EQUIPMENT

Our Engineering Department, thoroly experienced in the
above work, is ready to assist you. Our modern methods
often reduce costs. We have complete facilities for assembling.

*We shall be glad to have our representative call,
or send us samples or blue prints for quotations.*

All Phones—Lafayette 1301

THE SHERMAN-KLOVE CO.
3533 W. 47th St., Chicago, Ill.

**Spindle Speeds
to 10,000 R. P. M.**



SIGOURNEY No. 0
All Ball Bearing
High Speed Sensitive
Bench Drill Press

AN UNUSUALLY sensitive drill for accurate work at high speeds. Like all Sigourney Drills, it is sold on quality rather than price. All parts are interchangeable.

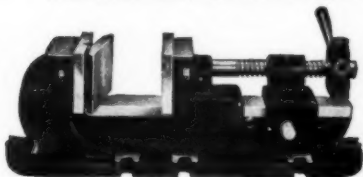
Sigourney Drills are made with one to four spindles. They are all extremely sensitive, accurate and durable.

*Write for our
Booklet today*

THE SIGOURNEY TOOL CO., HARTFORD, CONN.

Gem Drill Press Vise

With Automatic, Quick-Acting, Powerful Grip



***Holds
Irregular
Pieces
Firmly***

The jaws are made of steel, hardened and ground, with horizontal and vertical "V" grooves. The independent swivel jaw holds taper and irregular work with a bull-dog grip. Its quick action, powerful grip and adaptability make it *the most efficient vise on the market*. Made in three sizes. Write today for folder, picturing its use in drilling and milling operations.

J. E. Martin Tool & Die Works, 528 W. State St.
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Townsend Centrifugal Multi-Blow Riveters

You have heard of them.

Used in all countries.

The one riveter that imitates riveting
with hand hammer and set.

17 STYLES

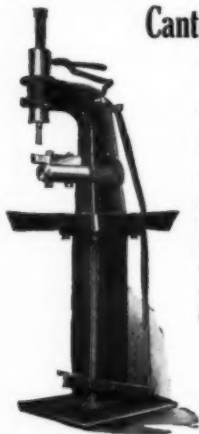
Rivets from .008" to $\frac{5}{16}$ " without distortion, or
breaking fragile materials—porcelain, glass, hard
rubber, bakelite, carbon, etc.

Especially for fine, high grade work.

H. P. Townsend Mfg. Co.
Hartford, Conn.

Foreign Representatives:

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Canton Pedestal and Bench Pneumatic Riveters

Give more blows with more power
in every blow, hence greater pro-
duction and lower costs.

No rubber, leather or wood in the
construction, therefore longer life
with less expense.

Nothing equals compressed air for
speed and simplicity.

You get the best when you buy a
Canton Pneumatic.

*We also build a complete line of
Chipping and Calking Hammers*

Canton Pneumatic Co.

1720-9th St., S. W., Canton, Ohio



For Your **RIVETING** Linley Rotary **RIVET SPINNERS**

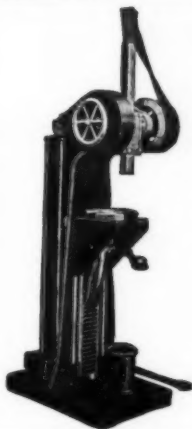
Cover a wide field of riveting.
Simple in design but—
Rigid and powerful.
Made in 15 Models.

Get the full details before buying
a riveter

WE ALSO MANUFACTURE
**EQUIPMENT FOR ROTARY
RIVET SPINNING MACHINES**

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Linley Brothers Co., 579 Fairfield Ave.,
Bridgeport, Conn.



Atlas Arbor Presses

For All Forcing Operations

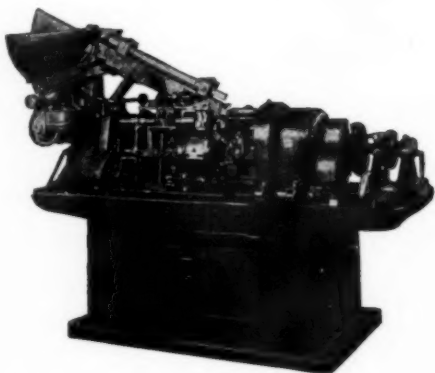
Illustration shows our
No. 55 Power Drive
Press, which is adapta-
ble for fast production
work and capable of
supplying ten tons pres-
sure.

Write for our Bulletin—
showing 30 different sizes

Atlas Press Co.

Department B,
Kalamazoo, Michigan

Combined Automatic Pointing and Threading Machines

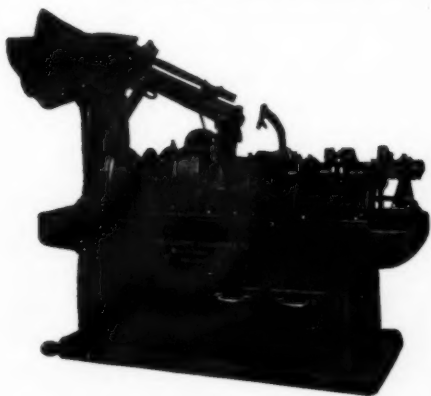


For Bolts and Cap Screws
Capacity— $\frac{3}{16}$ " x 1" Diameter
1" to 6" Long

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THE ECONOMY ENGINEERING

Automatic Shaving Machines



Shaves top and underneath
head of Cap Screws

Capacity $\frac{1}{4}$ " x $\frac{3}{4}$ " Diameter
 $\frac{3}{4}$ " to $5\frac{1}{2}$ " Long

Information

COMPANY, - Willoughby, Ohio



Strand

**SCREW DRIVING AND
NUT SETTING MACHINES**

For
**Assembly
Work
Several
Sizes**

**SUBMIT
SAMPLES**



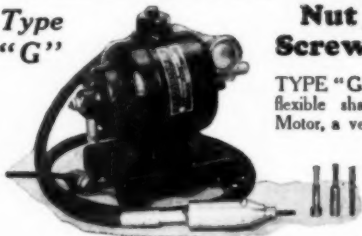
N. A. STRAND & CO.
5001 No. Lincoln St., CHICAGO

VIM TOOLS

Portable—Electric—Versatile—for

*Type
"G"*

**Nut Setting
Screw Driving**



TYPE "G" VIM Tool has flexible shaft with universal Motor, a very handy machine for small screws up to No. 6. Weighs only 12 ounces. Excellent for use in out-of-the-way places.

*We have other types to suit your conditions.
Send for Bulletins and Prices.*

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149 Broadway, New York City

HASKINS

FLEXIBLE SHAFT EQUIPMENT

Increase Production
Lower Costs



The Quality Tool for Quality Products

Made in various sizes and
types to meet your require-
ments.

For grinding, polishing,
sanding, wire-brushing, fil-
ing, buffing, finishing, etc.

Speeds from 660 to 12,000
R. P. M.

Sturdy construction—
reduces vibration to a
minimum; assures
efficient operation.

*Write today for
complete catalog on equipment for
the Machine Shop*

R.G.HASKINS COMPANY
Portable Flexible Shaft Machinery

4654 W. Fulton St.,

Chicago, Illinois

Branch Offices in Principal Cities

STECHER

**Automatic Turning, Drilling and
Threading Machine**



A New High Speed Production Tool


HERE is a real cost cutting tool for machining brass and iron castings, drop forgings, second operation work on screw machine products and other parts. Electrically operated and controlled and operator has an unobstructed view of work at all times. Fixtures of various designs may be attached to face of table, which can be mechanically, air or hydraulically operated. Set-ups are simple, each spindle is an independent unit. Spindle speeds up to 6000 RPM. Coolant pump and reservoir, ball bearings, automatic lubrication.

Write for Illustrated Folder Giving Complete Details

THE CHARLES STECHER CO.

2452-58 N. Greenview Ave.,

Chicago, Ill.



WHAT PRICE DRILLS?

When you purchase twist drills, do you "go shopping" or place your order on the "Cost-per-Hole" Test?

What do we mean by "Cost-per-Hole" Test? Simply that, no matter what you pay for drills, their value depends entirely upon the number of holes each drill can produce, and the cost per hole drilled.

As a result, more and more drill users, and buyers, are asking, not "How much?" but "What do your drills cost per hole?"

Cle-Forge High Speed Drills are offered you on the basis of their known, everyday performance. If you are interested in this modern, scientific way of buying, ask us to send you Performance Digests Nos. 56, 58, 59, 60, 61, 72, 82 and 83, together with complete instruction forms for making a comprehensive drill test in your own shop.



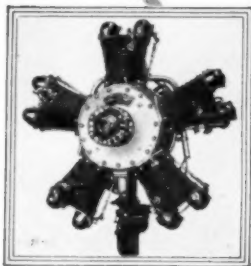
TRADE MARK
(SEE REG. PAT. 2,917,101)

The

CLEVELAND


TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

**TWIST DRILL
COMPANY
CLEVELAND
NEW YORK-CHICAGO-LONDON
SAN FRANCISCO**

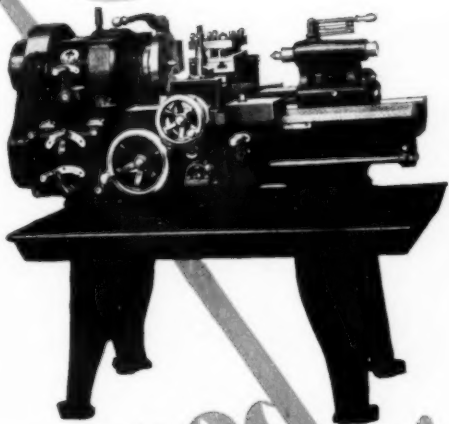


Records Broken

LeBlond lathes and LeBlond aircraft engines have established records in their respective fields. Both built for speed, under the highest standards of accuracy and precision.

The lathe illustrated is our 11" Rapid Production, a time saver on work to be turned and faced simultaneously.

THE
R. K. LeBLOND MCH. TOOL CO.
Cincinnati, Ohio



Speed

TRY THIS NEW VALVE

COMPLETE CONTROL
ANYWHERE BETWEEN
COMPRESSOR & TOOL

THIS new Quick-As-Wink valve controls air under pressure as quickly—as positively and as safely as you would snap an electric light switch.

When you push valve sleeve forward, the air by-passes to hose or tool. When you push valve sleeve back, the air automatically bleeds from hose or tool, while the air from compressor is trapped, relieving all pressure beyond the valve.

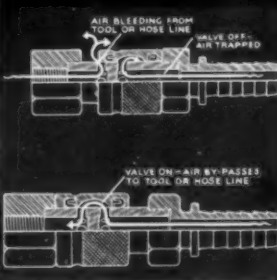
By means of two "U" leather packings the air pressure itself effects the seal—the higher the pressure, the tighter the seal.

Wherever air is used under pressure, there is a place to save time and money by using Quick-As-Wink valves. They are made in the types shown to fit standard sizes of pipe and hose and are sold by leading contractor, foundry and mill supply houses everywhere.

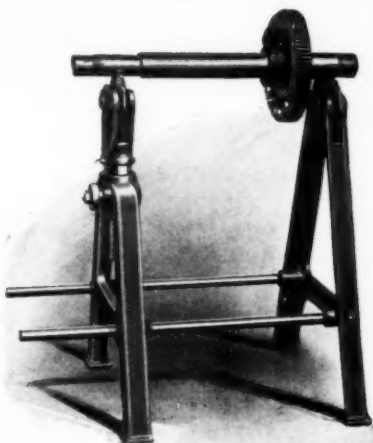
If you would like to try Quick-As-Wink valves, write us details of your particular use and we will send the proper size and type for testing purposes.

C. B. HUNT & SON
647 McKinley Ave., Salem, O.
Also Makers Of
Quick-As-Wink
Hose Couplings--Balling Wheels

Quick-As-Wink SHUT-OFF VALVE



BALANCING TOOLS



A Size And Type For Every Job

Sundstrand 20th Century Balancing Tools are made in a wide range of sizes and types. Their range is practically unlimited and includes aeroplane propellers, armatures, pulleys, cones, flywheels, polishing wheels, etc.

Capacity from 800 lbs to 24000 lbs.

Combination Balancing and Drilling Machines also available.

Send For Bulletin BT-20

Sundstrand Machine Tool Co.

Lathes, Milling Machines, Centering Machines, Balancing Tools

2510 Eleventh St., Rockford, Ill., U. S. A.



The advertisement features a central illustration of a machine tool table set-up. Radiating from this central unit are several curved lines, each connecting to a different CAD standardized appliance. These include a large overhead crane at the top left, a smaller overhead crane at the top right, a vertical support structure on the left, a rectangular frame on the right, a horizontal support at the bottom left, and a vertical support at the bottom right. The central unit is a complex assembly with various components labeled with letters like 'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z'.

CAD
Standardized
set-up appliances

Why force your men to waste time on machine tool table set-ups when CAD standardized appliances will convert this non-productive time into productive labor?

STANDARD SHOP
EQUIPMENT CO., Inc.
Set-up appliances for machine tools
 8135 Tinticum Ave., Phila., Pa.

You Cannot Overload The HANDIEST RACKS



Cast of high grade machinery iron they have a capacity of about 10,000 lbs. steel per single arm set or 20,000 lbs. per double arm set. Self-balancing — floor fastening seldom required. Ideal for servicing stock to automatic machines or for storage purposes. Occupy less space than others waste. Save three-fourths of former floor space. Pay for themselves quickly.

Shipped on FREE TRIAL

WM. S. YOHE SUPPLY CO.
 503 Mahoning Road, N. E., Canton, Ohio

"BURR" Keyseating Costs Less

No Dismantling—No Fuss



**The BURR
Portable
Keyseater**

Cuts keyways
up to 12" long,
in shafts up to 5"
diam., anywhere,
in any position.

Have one on hand for your next emergency—the cost is often saved on a single job. The seven sizes are *quick and accurate*. Hand or power driven. Over 10,000 in use. *Order yours today and save money!*

JOHN T. BURR & SON

422 Kent Ave., Brooklyn, N. Y.

Monster Keyseater

Not prehistoric but for the
use of the present time.

Catalog O Tells You

National Machine Tool Co.

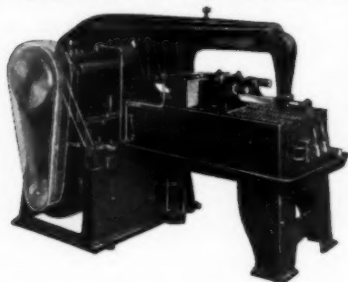
2268 Spring Grove Ave.,

Cincinnati, O.



A NEW POWER SAW

RACINE HYDRAULIC SHEARCUT



Positive, hydraulic feed for large size stock. Capacity 9"x9". Feed, lift and clutch are all hydraulic. Cutting rate in 9" cold rolled 15 to 20 minutes. This machine is new in every way and offers outstanding advantages on production work.

Write for complete information today.

Racine Tool & Machine Company
1754 State Street, Racine, Wisconsin

Automatic Saw Sharpener



for Saws 2 1/4" to 5" Grinds 60 T. Per Min. and 6-1/32" Saws at Once. Has Ball Bearing Spindle and Master Index Plate. Has no Equal for Grinding Saws Concentric With Hole, Because It Has Self Adjusted Bearings on Wheel and Saw Spindle.

Write for Circular

J. E. Porter Machine Co.
1872 Jefferson St., Muskegon, Michigan

LIBERT High Speed Sheet Metal SHEAR

NEW!

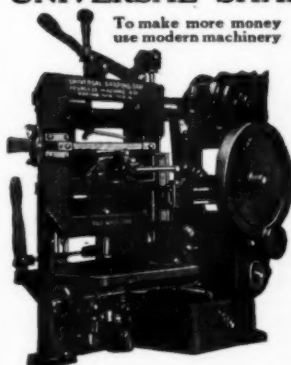
The LIBERT Shear guarantees rapid, accurate cutting of regular or irregular shapes. Capacity from thinnest shim to 10 gauge ($\frac{9}{64}$ " metal, as fast as operator can feed. Foot control leaves both hands free to guide work. Edges are true and square and so smooth no file finishing is needed. Inside of plates cut as easily as outside—you can split a scribed line.



*Write for Circular
and Price*

LIBERT MACHINE CO., Green Bay, Wis.

—PEERLESS— UNIVERSAL SHAPING SAW



To make more money
use modern machinery

Different Principles
Greater Efficiency
Give The Most Of—
Speed
Accuracy
Blade Economy

SIZES:

6"x6" -- 9"x9" -- 13"x13"

PEERLESS

HIGH SPEED HACK-SAWS

6"x6" 9"x9" 13"x16"

Sturdy--Efficient--Reliable

Peerless Machine Co.

1218 Sixteenth St.

Racine, Wisconsin

Write for Details

Cut Your Straightening Costs

Springfield
Straightening
Press—



Made in
3 Sizes

Accurate
Straightening
Service in
Shop
Factory
Toolroom
Garage

The arrangement of the Springfield makes it the ideal tool for straightening any length of rough or finished work—truingsprung tools—or testing and balancing cams, crank shafts, etc. Placed on the bench it saves the operator's time by eliminating waste steps, and makes for quicker handling of the work.

Let us send you a folder illustrating its many uses

The Springfield Machine Tool Company

633 West Southern Avenue,

SPRINGFIELD, OHIO

We also manufacture Engine Lathes and Shapers

The Anderson
Ever-Ready

Balancing Ways



Are extremely sensitive and require no leveling—no adjustments—no centers.

Made of quality materials in several sizes to balance everything that revolves up to 24000 lbs. weight. You will find Andersons always ready, always accurate, and lasting in their service.

"Swing"	20"	40"	60"	72"	96"	72"
Greatest distance bet. standards	20"	30"	30"	66"	88"	20"
Capacity in lbs.	1000	2000	2000	5000	10000	24000
Approx. shipping weight	45	90	150	350	650	
Code	Bnd	Bnd	Bnd	Bnd	Bnd	

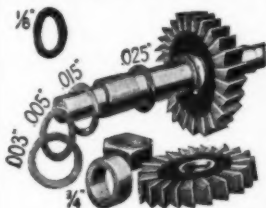
Any of above can be furnished with longer shafts

Anderson Bros. Mfg. Co.

1915 Kishwaukee St., Rockford, Ill.

Steel Spacing Washers—

Made of a good grade of Cold Rolled Strip Steel, also known as Shim Steel



Stock sizes for arbors of following diameters: $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2, $2\frac{1}{4}$, $2\frac{1}{2}$, 3, $3\frac{1}{2}$ and 4 in. and larger.

Stock thicknesses: .002, .003, .004, .005, .006, .007, .008, .010, .012, .015, .020, .025, .032, .047, .063, .093 and .125 inch.

Other thicknesses up to 3.000" made to order, with keyways if so ordered.

Ask us to send samples; you'll like them

Detroit Stamping Company
3443 West Fort St., Detroit, Mich.

Grant Rotary Riveter

*Highest Speed
Perfect Uniformity
Lowest Cost*



A Grant Riveter places and finishes one rivet every second it is in operation.

It will finish rivets to the exact degree of tightness or looseness that you desire, and the heads are perfectly formed and highly polished.

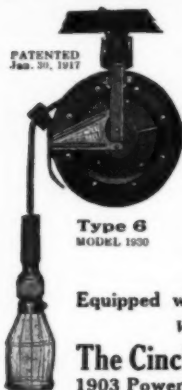
The Grant Riveter keeps operating costs at a minimum, and is so simple that unskilled labor can operate it as effectively as can skilled machinists.

Send samples of your riveting work and ask for a catalog

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

A Small Investment that Pays Big Dividends

PATENTED
Jan. 30, 1917



Type 6
MODEL 1930

Machine Shops and Industrial Plants of all kinds have learned that a small investment in AUTEX Swivel Jointed Extension Reels yields large dividends.

You cannot expect a workman to turn out accurate work without good light. The AUTEX supplies the light in the darkest, most inaccessible corner. Saves steps, eyes, and speeds up production. Goes anywhere—soon repays its low cost.

Approved by the Underwriters

Equipped with Swivel Joint and Rubber Cord

Write for descriptive circular

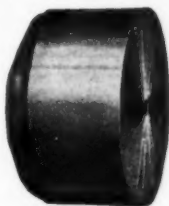
The Cincinnati Specialty Mfg. Co., Inc.
1903 Powers St., Cincinnati, Ohio

A thorough coverage is necessary to maximum advertising results. This is a truism.

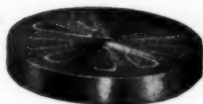
For the greatest coverage of the richest markets for machine tools and shop equipment, concentrate your advertising in

**HITCHCOCK'S
MACHINE TOOL BLUE BOOK**

"D & W" Flat & Rotary Magnetic Chucks



Have Proved Time
and Labor Savers



D. & W. Magnetic Chucks hold a great variety of iron and steel pieces for grinding, milling, planing and shaping operations. By the effective way they serve you, they soon pay for themselves. We specialize in problems dealing with the use of flat and rotary magnetic chucks. Let us investigate any question which is confronting you.

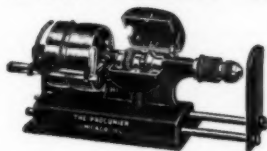
Special chucks to order. Folder and price list on request.

J. & H. Electric Co., 200 Richmond St.,
Providence, R. I.

TROUBLE?

If you have tapping trouble, either with breakage, or with imperfectly tapped holes, you can remedy it with a

"PROCUNIER" BENCH TAPPER



which has:

Balancing Reversing Action
All Hardened Gears
Bronze Bushings Throuout
Fool-Proof Tap Saver
Sure Grip on the Tap

No. 2, $\frac{7}{16}$ " in steel, with safety friction \$49.00, without \$41.00
No. 3, $\frac{1}{2}$ " in steel, with safety friction 55.00, without 46.00

*We also make safety tapping attachments for drill presses
and quick change tap and drill chucks*

PROCUNIER SAFETY CHUCK CO.

14 South Clinton Street,

Chicago, Illinois

Ames Amplifying Comparator

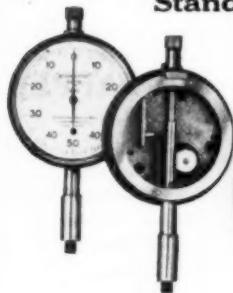
An unusually rugged and durable gauge for testing parts in quantity with speed and accuracy.

*It Repeats Its Readings !
Send for Special Bulletin.*



B. C. Ames Co., Waltham, Mass.
Detroit Office: 902 Stephenson Bldg.

SIMPLICITY — An Outstanding Feature of the New Standard Dial Indicator



Note the few parts, simple construction and sturdy build of this New "Standard" Indicator.

ACCURACY—The finest in gears and pinions, made by a new process.

EASY READING — Large figures, distinct graduation, no shadows.

LONG LIFE—Mechanism protected from dust, grit and moisture by patented dust cover.



Catalog and price list of complete line on request.

STANDARD GAGE COMPANY, INC.

Poughkeepsie, N. Y.

DETROIT

CLEVELAND

INDIANAPOLIS

CHICAGO

E-Z THREAD DIAL

Thread cutting on engine lathes made easy, and at lower cost. Made in four sizes. Can be easily attached to all size lathes. A reliable device that will aid the operator in the work of cutting threads. With it threads can be cut close up to shoulders as easily as the ordinary thread.



Eliminates stopping or reversing the lathe.

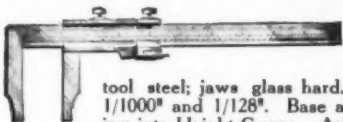
The many repeat orders received prove it is satisfactory after trial.

Can be shipped within two days after receipt of order.

Sent on thirty days' trial. Send for latest folder today.

JAMES M. COLVEN, 20 Wolfe Street, Yonkers, N. Y.

S. & S. 10" VERNIER CALIPER



Optical lapped finish of measuring surfaces; open face slide; finest

tool steel; jaws glass hard. Verniers reading $1/1000''$ and $1/128''$. Base available for changing into Height Gauge. Ask for our free trial

proposition,

S. & S. SPRING TAPER SLEEVES

Salvage tools with broken tangs instantly. No fitting necessary. Just slip over defective shank and tool is ready for use again.



GEORGE SCHERR CO.

142 W. Liberty St.,

NEW YORK

NEW YORK

Nicholson Expanding Mandrels



FOR THIRTY YEARS the railroad shops all over the country have continued to buy these time-saving expanding mandrels. If you haven't used them, write us and we will send any size on trial.

W. H. Nicholson & Co.

117 Oregon St.,

Wilkes-Barre, Pa.

Taps Broken At or Below The Surface

Delay Work — Increase Costs

Avoid these consequences by having a *Walton Tap Extractor* handy. Simply insert its flutes into the broken tap, twist the end, and the tap slides out. So simple that an apprentice can do it.

Made in three and four-flute styles.

We Ship on a 60-day Trial

*Send for a "Walton"—
you'll never regret it*

The Walton Company

302 Pearl St.,

Hartford, Conn.



FEDERAL

POCKET THICKNESS GAUGE

Model 20

For measuring all flat material, such as sheet metal, hack saws, wire, leather, rubber, webbing, fabric, paper, cardboard, celluloid, etc. Weighs only 5 oz. and is $\frac{1}{2}$ " thick. Range .200".

*Write for Complete Catalog of
all FEDERAL Models*

Federal Products Corporation
PROVIDENCE, R. I.

Western Branch: 7338 Woodward Ave., Detroit, Mich.

MARKING DEVICES

RUBBER STAMPS



STEEL STAMPS



**BURNING
BRANDS**



**ETCHED METAL
NAME PLATES**



**BRASS
LABELS**



THE SCHWERTLE STAMP CO.
BRIDGEPORT, CONN.

T.H.L. Front Lever Bench Punch

Malleable iron body; working parts hardened. Steel shaft and plunger. Die cannot lose alignment with punch. All parts interchangeable. Built for hardest, toughest work. Weight 70 lbs.

PRICE \$40

Extra Punches, 20 cents each; extra dies, 30 cents.

Capacity $\frac{1}{2}$ " holes through $\frac{3}{16}$ " steel; $\frac{13}{32}$ " through $\frac{1}{4}$ " steel. Punches and dies in stock from $\frac{1}{8}$ " to $\frac{1}{2}$ ".

Immediate shipment from stock

**T. H. LEWTHWAITE
MACHINE CO.**

(Est. 1890)

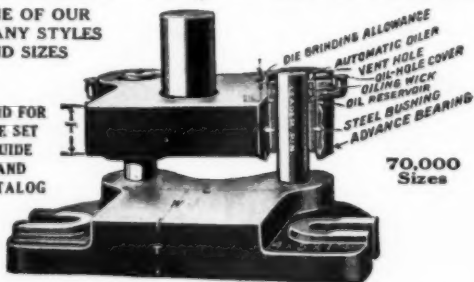
311 E. 47th St., NEW YORK



Automatically Oiled Die Sets

ONE OF OUR
MANY STYLES
AND SIZES

SEND FOR
DIE SET
GUIDE
AND
CATALOG



70,000
Sizes

E. A. BAUMBACH MFG. CO.

GENERAL OFFICE AND WORKS

1810 South Kilbourn Ave., CHICAGO, ILLINOIS

Sales and Engineering Offices—Principal Cities U. S. A. and Canada

For sawing, filing, lapping



Investigate this machine. Send for illustrated bulletin today.

The OLIVER Die Making Machine does all such work as accurately and perfectly as is possible by hand—and at a fraction of the cost. Made in several models to meet varying conditions, an OLIVER in your shop will save its modest cost quickly.

We also manufacture Drill-pointers, Point Thinners, Tap and Cutter Grinders. Send for bulletins.



The Oliver Instrument Company
1408 Maumee Street, Adrian, Michigan

DANLY DIE SETS

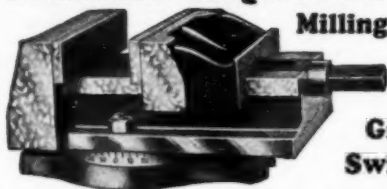
Immediate delivery from stock, standardized, interchangeable die sets—any type and size for every need. Special die sets built to specifications or designed to meet requirements. Send for Danly Catalogue—The Manual of the Metal Stamping Industry, used by over 15,000 designers, etc.

Danly Machine Specialties, Inc.
2116 S. 52nd Avenue, Chicago

Detroit, Mich., 1549 Temple Ave.
Cleveland Ohio, 1444 E. 49th St.

Long Island City, N. Y., 36-12 34th St.
Rochester, N. Y., 16 Commercial St.

Plunket Improved Vises



**Milling Machine
Vise
with
Graduated
Swivel Base**

In Ordering this Vise give size of slot in table

No. 1—6" jaws, $1\frac{1}{4}$ " deep, opens 5" - - \$38.00

No. 2—10" jaws, $2\frac{1}{4}$ " deep, opens 8 $\frac{1}{2}$ " - - \$2.00

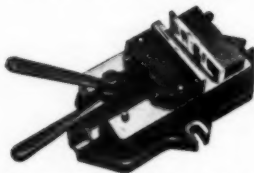
We make a line of up-to-date Vises, for Drill Presses, Shapers, Milling Machines and Grinders. The picture shows our standard milling machine vise as regularly furnished and carried in stock. All made of best materials. Our other Vises will be shown in following issues.

Prices are net, f.o.b. Chicago. Dealers' inquiries are solicited. Write for illustrated folder today.

J. E. Plunket Machine Co.

213-215 N. Ada Street, Chicago, Illinois

The Most POWERFUL Vise Made Hartford Milling Vise



Jaw width 5"
Jaw depth $1\frac{1}{4}$ "
Maximum opening $3\frac{1}{2}$ "
Weight 40 lbs.

Also made in the swivel-jaw type with hard or soft jaws, maximum opening $2\frac{1}{4}$ ".

The "Hartford" is designed to give the utmost in service. A lower cam-faced handle gives required quick opening and return—while a top eccentric lever-handle furnishes tremendous binding power. You can rely on "Hartford" to survive the hardest usage. Its steel parts are drop forged, hardened and ground—its base is made of special iron.

Send for descriptive catalog illustrating its usefulness

*We also Build Machinery on a Contract Basis and Design and Develop
Special Automatic Machinery—Gears Cut to Order.*

Hartford Special Machinery Co., 285 Homestead Ave., HARTFORD, CONN.

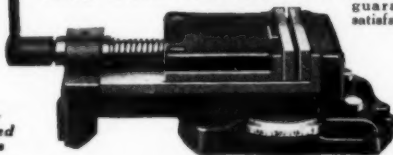


Milling Machine Vises

Strong, rugged construction, steel jaws. Rigid clamping device on swivel bases. Support under rear end of body, with slot for T-bolt. Graduated 360°. Swings entirely around. Steel Vises built to order. We guarantee satisfaction.

Est.
1906

Send for
Illustrated
Circulars



Specifications and List Prices

No.	Width Jaws	Jaws Open	Depth Jaws	Plain Vise Weight	Price	Swivel Vise Weight	Price
4	4 $\frac{1}{8}$ "	2 $\frac{1}{4}$ "	1 $\frac{1}{8}$ "			26 lbs.	\$15.50
5 $\frac{1}{2}$	5 $\frac{3}{4}$ "	3 $\frac{1}{4}$ "	1 $\frac{3}{8}$ "	50 lbs.	\$16.50	60 lbs.	\$20.00
7	7 $\frac{3}{4}$ "	5 $\frac{1}{8}$ "	2"	145 lbs.	\$33.00	160 lbs.	\$45.00
6	6"	8"	1 $\frac{1}{2}$ "	Drill Press Vise		60 lbs.	\$20.00

We manufacture Multiple Spindle Index Heads for fluting and squaring Taps and Reamers, also Machine and Tool Work of all kinds.

MILLER & CROWNSHIELD, Greenfield, Mass.

What You've Been Looking For A UNIVERSAL VISE

For Production or Tool Work

*Representatives
Wanted
Every-
where*



Patent Pending

ANGLE ADJUSTMENT BY WRENCH (NOT SHOWN)

Chicago Tool & Engineering Company

8391 South Chicago Ave.,

CHICAGO, ILL.

Something to Move?—



Heavy? Awkward?
Hard to Get At?
That's when you need—and
appreciate—the

"CANTON" Portable Crane, Hoist and Truck

It will reach into otherwise inaccessible places, pick up any bulky, unwieldy object weighing up to 6000 lbs. with ease, and transport it from one end of the shop to the other. *One man* can operate it—no need to call 6 to 10 men from their work to risk torn ligaments. Safety Friction Load Brake can be added to new or old "Cantons" at small extra cost.

*The several sizes are
shown in Booklet E-8*

CANTON FOUNDRY & MACHINE CO., Canton, Ohio

New York Office: Carnegie Hall, 154 West 57th Street

We Specialize In Hollow Boring

If You Use Hollow Bored Forgings

A quotation from us will show the way to greater economy, efficiency and service. We make Lathe Spindles, Rams, Clutch Shafts, Piston Rods and similar parts—to *your specifications*. And you can be sure of uniform quality, accuracy and fair prices—to say nothing of prompt delivery! Why not prove it with a trial order?



Send Blueprints for Estimates

AMERICAN HOLLOW BORING CO.

1035 WEST NINETEENTH ST., ERIE, PA.

Norgren Sight Feed Automatic Air Line Lubricator



The NORGREN SIGHT FEED AUTOMATIC AIR LINE LUBRICATOR not only provides a simple means of injecting lubricant into the air stream of pneumatically operated tools, but of even greater importance, the operator can SEE what amount of lubricant is entering the line.

It is adjustable to any demand by means of a needle valve and is entirely automatic in that it operates only when the air is in motion. There are no working parts.

You cannot *forget* to shut off the NORGREN Lubricator. You cannot *forget* to turn it on. It is easily filled and positive in action.

Manufactured by

Eastern Distributor

CARL A. NORGREN CO.
Denver, Colorado

J. N. FAUVER CO. Inc.,
31 Brady St., Detroit, Mich.



Opened



Hercules Shears and Rod Cutters

are the most powerful hand tools on the market. Made in several styles for bench and floor mounting. Capacities: Rod 1-8 to 3-4 in. diameter; sheet 1-16 to 6-16 in. thickness.

TUCKER OIL CUPS and OIL HOLE COVERS

COMPACT — DURABLE — ECONOMICAL
A Style and Size for Every Purpose

Easily closed by twist of fingers or self-closing. This feature means a dust- and grit-tight cup and prevents oil throwing during machine operation.

Opened
Style E



Style F

Send for Catalog No. 13 and Samples

W. W. & C. F. TUCKER, INC.

612 Capitol Ave., Hartford, Conn.

FOREIGN AGENTS: Fenwick Freres & Co., Paris, France.

Buck & Hickman Ltd., London, England.

Alfred Herbert Ltd., Yokohama, Japan.

Vanderbeek Universal Joints

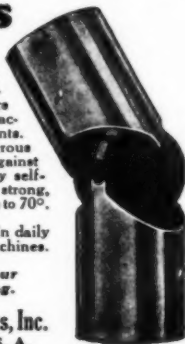


—represent the practical refinements of 25 years experience in manufacturing Universal Joints. All parts are generous sized, fully protected against dirt, and are practically self-oiling. Exceptionally strong, they transmit full power up to 70°.

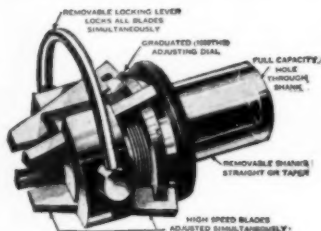
Vanderbeek Joints are in daily use on thousands of machines.

Write today for our Descriptive Catalog.

American Tool Works, Inc.
Hartford, Conn., U. S. A.



Quick Adjustable Hollow Mill



Sizes $\frac{3}{32}$ to $2\frac{1}{2}$ "

**For Finishing
Forgings,
Castings,
Bar Stock**

**Used on Automatics, Screw Machines,
Drills, Millers.**

Ogden R. Adams,

407 Cutler Building,

ROCHESTER, N. Y., U. S. A.

108

UTILITY-WIARD Quick Change CHUCKS

(Improved)

For The
Rapid Changing of
Tools While The
Spindle Is
Turning



**Quick
Accurate
Powerful
Dependable**

The J. C. Glenzer Co.

6467 Epworth Blvd.,

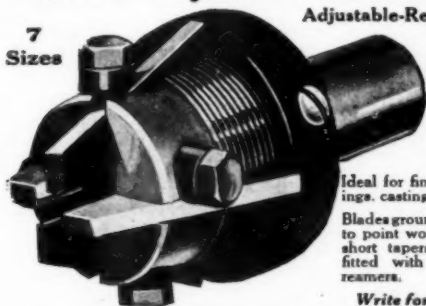
DETROIT, MICH.

Genesee Adjustable Hollow Mill

**7
Sizes**

Adjustable-Replaceable
Blades

**7
Styles**



Ideal for finishing forgings, castings, etc.

Blades ground any angle to point work and turn short tapers. Can be fitted with drills and reamers.

Write for Catalog

A Genesee Adjustable Hollow Mill can be made for every job.

Genesee Manufacturing Co., Inc.
ROCHESTER, N. Y.



IF YOU TAP HOLES—

Why not have the feel of the tap right at your finger tips? A tap is a delicate tool. The Ettco Tapping Attachment taps delicately—with increased speed—

THE ETTCO High Speed Tapping Attachment

is simple—nothing to adjust—if the tap sticks or hits bottom the Ettco slips—the same action coming out. No clash of a positive clutch—just the smooth action of the patented leather lined cone clutch.

SENSITIVE—SPEEDY—SATISFACTORY.

No. 1—Tapping Attachment	$\frac{3}{16}$ " in steel, $\frac{1}{4}$ " in C. I.	\$35.00
No. 2—Tapping Attachment	$\frac{7}{16}$ " in steel, $\frac{3}{8}$ " in C. I.	50.00
No. 3—Tapping Attachment	$\frac{1}{2}$ " in steel, $\frac{7}{8}$ " in C. I.	80.00
No. 5—Tapping Attachment	$\frac{7}{8}$ " in steel, 1" in C. I.	90.00

ETTCO TOOL CO., Inc., 600 Johnson Ave.,
BROOKLYN, N.Y.

Formerly Tool Division of Eastern Tube & Tool Co., Inc.

Model No. 4 Nibbles $\frac{3}{16}$ " Flat Stock A HANDNIB TOOL

Will Mean A 90% Saving
To You On Cost Of

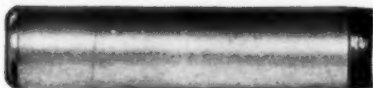
*Templates, Trial
Blanks, Sheet
Metal Experimental
Work, etc.*

Get price on our complete line of hand-operated nibbling tools. You will save original cost of tool many times over.



NATIONAL MACHINE TOOL CO.
1536B CLARK ST., RACINE, WIS.

ACME DOWEL PINS



Standard hardened and ground to within .0002" over listed sizes. Also carried oversize .001" for use in repair work, etc. Ask for Bulletin No. 551.

ACME DRILL BUSHINGS

Bulletin No. 501 describes and illustrates the various types and standard sizes of ACME Drill Bushings. Special sizes made to your order.



Bulletins and special low prices sent upon request.



ACME INDUSTRIAL CO.
419 Carpenter St., Chicago, Ill.
New York Office and Stock, 173 Lafayette St., New York

HARDINGE

COLLETS



We are Specialists—

in manufacturing any design collet—from the smallest to the largest size, either from sample or drawing, and including Screw Machine Collets.

Prices quoted on application

Hardinge Brothers Inc.
4149 Ravenswood Ave, Chicago Ill.

Classified Finding Index

Arbors, Solid
Nelson & Co., W. H., Wilkes-Barre, Pa.

Auto-Gages For Dies
Daily Machine Specialties, Inc., 2118 So.
62nd Ave., Chicago

Automatics
National Acme Co., Cleveland, Ohio
New Britain Machine Co., New Britain, Conn.

Balancing Ways
Anderson Bros. Mfg. Co., Rockford, Ill.
Sundstrand Machine Tool Co., Rockford, Ill.

Balls, Bearing and Burnishing
Abbott Ball Co., Hartford, Conn.

Band Saw Machines, for Metal
Armstrong-Blum Mfg. Co., 841 N. Francisco
Ave., Chicago
City Machine & Tool Works, Dayton, Ohio
Porter-Cable Machine Co., Syracuse, N. Y.
Racine Tool & Machine Co., 1764 State Street,
Racine, Wis.
Wells Mfg. Corp., Three Rivers, Mich.

Bar Cutters
Buffalo Forge Co., Buffalo, N. Y.
Hagen, H. J., 109 Lafayette St., New York

Barrels, Tumbling
Abbott Ball Co., Hartford, Conn.

Bench Legs, Steel
New Britain Mch. Co., New Britain, Conn.

Bending Machines, Hand and Power
Armstrong-Blum Mfg. Co., 841 N. Francisco
Ave., Chicago
Excelsior Tool & Mch. Co., E. St. Louis, Ill.
Handley & Whittemore Co., Beloit, Wis.
Lewthwaite Mch. Co., T. H., 311 E. 47th, N. Y.
Lourie Mfg. Co., 865 Washington, Chicago
Pedrick Tool & Machine Co., Philadelphia

Bending Rolls
Buffalo Forge Co., Buffalo, N. Y.
Handley & Whittemore Co., Beloit, Wis.

Bolt and Nut Machinery
Economy Engineering Co., Willoughby, O.
Foote-Burt Co., Cleveland, O.

Boring Bars
Chicago Tool & Engineering Co., 6289 So.
Chicago Ave., Chicago
Pedrick Tool & Machine Co., Philadelphia

Boring Bars, Cylinder
Pedrick Tool & Machine Co., Philadelphia

Boring, Drilling & Milling Machines
Defiance Machine Co., Defiance, O.

Boring Machines, Horizontal
Avey Drilling Machine Co., Cincinnati
Morris Machine Tool Co., Cincinnati, Ohio
Pedrick Tool & Machine Co., Philadelphia

Boring Tools
Chicago Tool & Engineering Co., 6289 So.
Chicago Ave., Chicago
The Co-Operative Mch. Co., Cleveland, O.
Rickett-Shafer Co., Erie, Pa.

Brands, Burning
Schwerdtle Stamp Co., Bridgeport, Conn.

Brunch Sharpening Machines
Colonial Tool Co., Inc., Detroit, Mich.

Branches
Colonial Tool Co., Inc., Detroit, Mich.

Branching Machine Work
Colonial Tool Co., Inc., Detroit, Mich.
Sherman-Klove Co., 3633 W. 47th St., Chgo.

Branching Tools
Colonial Tool Co., Inc., Detroit, Mich.

Buffers, Bench Type
Hisey-Wolf Machine Co., Cincinnati, Ohio

Buffers, Combination Grinder
Hisey-Wolf Machine Co., Cincinnati, Ohio

Buffers, Floor Stand
Hisey-Wolf Machine Co., Cincinnati, Ohio

Buffers, Portable Electric
Hisey-Wolf Machine Co., Cincinnati, Ohio

Bulfinch Wheels
Hunt & Son, C. B., Salem, Ohio

Bulldozers, Hydraulic
Lourie Mfg. Co., 865 Washington, Chicago

Bushings, Drill
Acme Industrial Co., 419 N. Carpenter St.,
Chicago

Burnishing Equipment, Ball
Abbott Ball Co., Elmwood, Conn.

Bushing Finishing Machines.
Economy Engineering Co., Willoughby, O.

Calipers, Vernier
Scherr Co., Geo., 144 Liberty St., New York

Center Grinders
Chicago Tool & Engineering Co., 6289 So.
Chicago Ave., Chicago

Centering Machines
Sundstrand Machine Tool Co., Rockford, Ill.

Chamfering Machines, Automatic
Grant Mfg. & Mch. Co., Bridgeport, Conn.

Chaser Grinders
National Acme Co., Cleveland, Ohio.

Chucking Machines
National Acme Co., Cleveland, Ohio
New Britain Mch. Co., New Britain, Conn.
Springfield Machine Tool Co., Springfield, O.
Stevens Inc., John B., 308 Hudson Street,
New York

Chucks, Automatic
Procunier Safety Chuck Co., 14 S. Clinton
St., Chicago

Chucks, Collet
Ames Co., B. C., Waltham, Mass.
Hardinge Brothers, Inc., 1770 Hartson Ave.,
Chicago
Procunier Safety Chuck Co., 14 S. Clinton
St., Chicago

Chucks, Drill
Etico Tool Co., Inc., 800 Johnson Ave.,
Brooklyn, N. Y.
Hagen, H. J., 109 Lafayette St., New York
Hartford Special Mch. Co., Hartford, Conn.

Chucks, Drill and Tap
Procunier Safety Chuck Co., 14 S. Clinton
St., Chicago

Chucks, Lathes.
Hagen, H. J., 109 Lafayette St., New York
Stevens Inc., John B., 308 Hudson Street,
New York

Chucks, Magnetic
J. & H. Electric Co., Providence, R. I.

Chucks, Oval
Frew Machine Co., Philadelphia, Pa.

Chucks, Quick Change
Procunier Safety Chuck Co., 14 S. Clinton
St., Chicago

Clamps, Die
Daily Machine Specialties, Inc., 2118 So.
62nd Ave., Chicago

Clutches, Friction
Conway Clutch Co., Cincinnati, O.
Jones Foundry & Machine Co., W. A.,
4480 W. Roosevelt Road, Chicago

Classified Finding Index

Cold Saws

Burke Machine Tool Co., Connecticut, Ohio

Collets

Ames Co., B. C., Waltham, Mass.
Hardinge Brothers, Inc., 1770 Bertess Ave., Chicago

Comparators

Federal Products Corp., Providence, R. I.

Contract Work Wanted

Burke Machine Tool Co., Connecticut, O.
Sherman-Klove Co., 3533 W. 47th St., Chgo.

Counterbores and Spot Facers

Glenzer Co., J. C., Detroit, Mich.

Couplings, Friction Clutch

Conway Clutch Co., Cincinnati, O.
Jones Foundry & Machine Co., W. A., 4450 W. Roosevelt Road, Chicago

Couplings, Flexible

Jones Foundry & Machine Co., W. A., 4450 W. Roosevelt Road, Chicago
Nicholson Co., W. H., Wilkes-Barre, Pa.

Couplings, Shaft

Jones Foundry & Machine Co., W. A., 4450 W. Roosevelt Road, Chicago
Nicholson Co., W. H., Wilkes-Barre, Pa.

Cranes, Portable

Ganedy-Otto Mfg. Co., Chicago Heights, Ill.
Canton Foundry & Mch. Co., Canton, Ohio

Crank Pin Turning Machine

Fedrick Tool & Machine Co., Philadelphia

Cutters, Keyseating

Davis Keyseater Co., Rochester, N. Y.

Cutters, Milling

Adams, Orden R., Rochester, N. Y.
Genesee Mfg. Co., Inc., Rochester, N. Y.
Reed-Proutie Corp., Worcester, Mass.

Cutting-Off Machines

Scherr Co., Geo., 144 Liberty St., New York

Cutting-Off Tools

Luers Incorporated, Detroit, Mich.

Cylinder Boring Machines, Portable

Fedrick Tool & Machine Co., Philadelphia

Demagnetizers

J. & H. Electric Co., Providence, R. I.

Die Casting Machines

Madison-Kipp Corporation, Madison, Wis.

Die Making Machines

Oliver Instrument Co., Adrian, Mich.

Dies, Automatic Self-Opening

National Acme Co., Cleveland, Ohio
Rickert-Shafer Co., Erie, Pa.

Dies, Blank and Forming

American Tool Works, Inc., Hartford, Conn.

Dies, Die Casting

Madison-Kipp Corporation, Madison, Wis.

Die Sets

Baumbach Mfg. Co., E. A., 1812 So. Kilmourne Ave., Chicago
Danly Machine Specialties, Inc., 2116 So. 52nd Ave., Chicago
John H. Dorman, West New York, N. J.

Die Sinking and Engraving Machines

Keller Mech. Eng. Corp., 58A Washington St., Brooklyn, N. Y.

Dividing Heads

Scherr Co., Geo., 144 Liberty St., New York
Stevens Inc., John B., 306 Hudson Street, New York

Drill Holders

Chicago Tool & Engineering Co., 8099 So. Chicago Ave., Chicago

Drill Racks

Peerless Machine Co., Racine, Wis.

Drilling Heads, Multiple

John H. Dorman, West New York, N. J.
Oesterlein Machine Co., Cincinnati, Ohio
Stecher Co., Chas., 2452 N. Greenview Av., Chicago
United States Drill Head Co., Cincinnati

Drilling Machines, Automatic

Bradford Machine Tool Co., Cincinnati, Ohio
Stecher Co., Chas., 2452 N. Greenview Av., Chicago

Drilling Machines, Bench

Ames Co., B. C., Waltham, Mass.
Avery Drilling Machine Co., Cincinnati
Ganedy-Otto Mfg. Co., Chicago Heights, Ill.
National Elect. Prod. Co., 148 Baxter, N. Y.
Sigourney Tool Co., Hartford, Conn.
Stecher Co., Chas., 2452 N. Greenview Av., Chicago
Taylor & Fenn Co., Hartford, Conn.
U. S. Electrical Tool Co., Cincinnati, Ohio
Winterhoff Tool & Machine Co., Elkhart, Ind.

Drilling Machines, Boiler

National Elect. Prod. Co., 148 Baxter, N. Y.

Drilling Machines, Horizontal

Detroit Machine Tool Co., Detroit, Mich.
Fraw Machine Co., Philadelphia, Pa.
Morris Machine Tool Co., Cincinnati, Ohio
National Elect. Prod. Co., 148 Baxter, N. Y.
Stevens Inc., John B., 306 Hudson Street, New York
Whitwind Products Co., Indianapolis, Ind.

Drilling Machines, Multiple Spindle

Avery Drilling Machine Co., Cincinnati
Detroit Machine Tool Co., Detroit, Mich.
Foots-Burt Co., Cleveland, O.
National Elect. Prod. Co., 148 Baxter, N. Y.
Sigourney Tool Co., Hartford, Conn.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Portable Electric

Cincinnati Electrical Tool Co., Cincinnati, O.
Hisey-Wolf Machine Co., Cincinnati, O.
Mall Tool Co., 7730 S. Chicago Ave., Chicago
National Elect. Prod. Co., 148 Baxter, N. Y.
Standard Electrical Tool Co., Cincinnati, O.
Strand Co., N. A., 5091 N. Lincoln St., Chicago
U. S. Electrical Tool Co., Cincinnati, Ohio
Vina Tool Co., 149 Broadway, New York
Winterhoff Tool & Machine Co., Elkhart, Ind.

Drilling Machines, Post

Buffalo Forge Co., Buffalo, N. Y.
Ganedy-Otto Mfg. Co., Chicago Heights, Ill.
Hammond Mfg. Co., Cleveland, Ohio
Hisey-Wolf Machine Co., Cincinnati, Ohio
National Elect. Prod. Co., 148 Baxter, N. Y.

Drilling Machines, Radial

American Tool Works Co., Cincinnati, O.
Ganedy-Otto Mfg. Co., Chicago Heights, Ill.
Dresser Machine Tool Co., Cincinnati, O.
Hammond Mfg. Co., Cleveland, Ohio
Morris Machine Tool Co., Cincinnati, Ohio
National Elect. Prod. Co., 148 Baxter, N. Y.
Taylor & Fenn Co., Hartford, Conn.
Western Mch. Tool Works, Holland, Mich.

Classified Finding Index

Drilling Machines, Semi-Automatic
Detroit Machine Tool Co., Detroit, Mich.
Stecher Co., Chas., 2452 N. Greenview Ave.,
Chicago

Drilling Machines, Sensitive
Avey Drilling Machine Co., Cincinnati
Burke Machine Tool Co., Canton, Ohio
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Foots-Burt Co., Cleveland, O.
Leland-Gifford Co., Worcester, Mass.
National Elect. Prod. Co., 148 Baxter, N. Y.
Sigourney Tool Co., Hartford, Conn.
Taylor & Penn Co., Hartford, Conn.
U. S. Machine Tool Co., Cincinnati, O.

Drilling Machines, Vertical
Avey Drilling Machine Co., Cincinnati
Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Foots-Burt Co., Cleveland, O.
Leland-Gifford Co., Worcester, Mass.
National Elect. Prod. Co., 148 Baxter, N. Y.
Centerline Machine Co., Cincinnati, Ohio
Sigourney Tool Co., Hartford, Conn.
Standard Electrical Tool Co., Cincinnati, O.
Taylor & Penn Co., Hartford, Conn.

Drilling Stands, Bench, Post and Radial
Hisey-Wolf Machine Co., Cincinnati, Ohio

Drills, Marble
Hisey-Wolf Machine Co., Cincinnati, Ohio

Drills, Twist
Cleveland Twist Drill Co., Cleveland, Ohio.

Emery Wheel Dressers and Cutters
Taylor & Penn Co., Hartford, Conn.
Western Tool & Mfg. Co., Springfield, O.

Engravers, Mechanical and Hand
Schwardtke Stamp Co., Birdsreport, Conn.

Etching Machines, Electric
Brewster Co., Wm., Inc., 50 Church St.,
New York

Experimental Work
Luma Electric Equipment Co., Toledo, Ohio.
American Tool Works, Inc., Hartford, Conn.

Feeders, Oil and Soda Water
New Britain Machine Co., New Britain, Conn.

Filing Machines
LaPorte Machine & Tool Co., LaPorte, Ind.
Oliver Instrument Co., Adrian, Mich.
Wardwell Mfg. Co., Cleveland, O.

Filing and Sawing Machines
LaPorte Machine & Tool Co., LaPorte, Ind.

Flexible Shaft Machinery
Haskins Co., R. G., 4654 W. Fulton St.,
Chicago
Keller Mech. Eng. Corp., 58A Washington
St., Brooklyn, N. Y.
Mail Tool Co., 7780 S. Chicago Ave., Chicago

Forges
Buffalo Forge Co., Buffalo, N. Y.
Canedy-Otto Mfg. Co., Chicago Heights, Ill.

Forgings, Hollow Bored
American Hollow Boring Co., Erie, Pa.

Furniture, Machine Shop
New Britain Machine Co., New Britain, Conn.
Western Tool & Mfg. Co., Springfield, O.

Gages, Cylindrical and Thread
Federal Products Corp., Providence, R. I.

Gages, Dial
Amea Co., B. C., Waltham, Mass.
Federal Products Corp., Providence, R. I.
Standard Gage Co., Poughkeepsie, N. Y.

Gages, Pin, Plug, Ring and Snap
American Tool Works, Inc., Hartford, Conn.
Standard Gage Co., Poughkeepsie, N. Y.

Gages, Special
Standard Gage Co., Poughkeepsie, N. Y.

Gages, Spline
Colonial Tool Co., Inc., Detroit, Mich.

Gauges, Taper
Hartford Special Mch. Co., Hartford, Conn.

Gear Burnishers
City Machine & Tool Works, Dayton, Ohio

Gear Cutters
Chicago Gear Works, 769-773 W. Jackson
Hlvd., Chicago
Triplex Machine Tool Corp., 50 Church St.,
New York

Gear Hobbers
Scherr Co., Geo., 144 Liberty St., New York
Triplex Machine Tool Corp., 50 Church St.,
New York

Gears
Boston Gear Works Sales Company, Norfolk
Dwms., Mass.
Chicago Gear Works, 769-773 W. Jackson
Hlvd., Chicago
Crofoot Gear Corp., C. E., So. Easton, Mass.
Horsburgh & Scott Co., Cleveland, Ohio
Jones Foundry & Machine Co., W. A.,
4455 W. Roosevelt Road, Chicago
Massachusetts Gear & T. Co., Webburn, Mass.

Gears, Herringbone
Crofoot Gear Corp., C. E., So. Easton, Mass.
Horsburgh & Scott Co., Cleveland, Ohio
Jones Foundry & Machine Co., W. A., 4455
W. Roosevelt Road, Chicago

Gears, Rawhide, Bakelite, Fabrol
Chicago Gear Works, 769-773 W. Jackson
Hlvd., Chicago
Crofoot Gear Corp., C. E., So. Easton, Mass.
Horsburgh & Scott Co., Cleveland, Ohio

Grinders, Air
Madison-Kipp Corporation, Madison, Wis.

Grinding Machine Work, Disc
Sherman-Klova Co., 3533 W. 47th St., Chgo.

Grinding Machine Att., Pneumatic Turbine
Hinsrud Machine Works, Inc., 3910 Palmer
St., Chicago

Grinding Machines, Angle Plate
Hisey-Wolf Machine Co., Cincinnati, Ohio

Grinding Machines, Belt
Gallmeyer & Livingston Co., Grand Rapids,
Mich.

Lehmann Machine Co., St. Louis, Mo.
Peerless Surfacing Machine Co., Troy, N. Y.
Walls Sales Corp., 98 Warren St., New York

Grinding Machines, Bench
Gallmeyer & Livingston Co., Grand Rapids,
Mich.

Hisey-Wolf Machine Co., Cincinnati, O.
Standard Electrical Tool Co., Cincinnati, O.
U. S. Electrical Tool Co., Cincinnati, Ohio

Grinding Mchs., Combination Buffer
Hisey-Wolf Machine Co., Cincinnati, Ohio

Grinding Machines, Cutter, Reamer and Tool
Gallmeyer & Livingston Co., Grand Rapids,
Mich.

Jarecki Mch. & T. Co., Grand Rapids, Mich.
LeBlond Mch. Tool Co., R. K., Cincinnati, O.
National Machine Tool Co., Racine, Wis.
Centerline Machine Co., Cincinnati, Ohio
Oliver Instrument Co., Adrian, Mich.
Stevens Inc., John B., 306 Hudson Street,
New York

Thompson Grinder Co., Springfield, Ohio
U. S. Electrical Tool Co., Cincinnati, Ohio

Grinding Machines, Cylindrical
American Machine Tool Co., Hackettstown,
N. J.
Jarecki Mch. & T. Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio

Classified Finding Index

Grinding Machines, Die

American Machine Tool Co., Hackettstown, N. J.
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Jarecki Mch. & T. Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Disc

American Machine Tool Co., Hackettstown, N. J.
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Gardner Machine Co., Beloit, Wis.
Hisey-Wolf Machine Co., Cincinnati, Ohio
Porter Cable Machine Co., Syracuse, N. Y.
Winterhoff Tool & Mch. Co., Elkhart, Ind.

Grinding Machines, Drill

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Oliver Instrument Co., Adrian, Mich.

Grinding Machines, External

Hisey-Wolf Machine Co., Cincinnati, Ohio

Grinding Machines, Face

Taylor & Fenn Co., Hartford, Conn.

Grinding Machines, Floor

Hisey-Wolf Machine Co., Cincinnati, Ohio
U. S. Electrical Tool Co., Cincinnati, Ohio

Grinding Machines, Flexible Shaft

Keller Mch. Eng. Corp., 58A Washington St., Brooklyn, N. Y.

Grinding Machines, Hob

Scherr Co., Geo., 144 Liberty St., New York

Grinding Machines, Internal

Chicago Tool & Engineering Co., 8389 So. Chicago Ave., Chicago
Hisey-Wolf Machine Co., Cincinnati, Ohio
Mall Tool Co., 8389 S. Chicago Ave., Chgo.
National Machine Tool Co., Racine, Wis.
Onsrud Machine Works, Inc., 3910 Palmer St., Chicago
Palmer-Edwards Co., Flint, Mich.
Taylor & Fenn Co., Hartford, Conn.
Thompson Grinder Co., Springfield, Ohio
U. S. Electrical Tool Co., Cincinnati, Ohio

Grinding Machines, Portable Electric

Chicago Tool & Engineering Co., 8389 So. Chicago Ave., Chicago
Cincinnati Electrical Tool Co., Cincinnati, O.
Hisey-Wolf Machine Co., Cincinnati, O.
Keller Mch. Eng. Co., 58A Washington St., Brooklyn, N. Y.
Mall Tool Co., 7730 S. Chicago Ave., Chgo.
National Machine Tool Co., Racine, Wis.
Porter-Cable Machine Co., Syracuse, N. Y.
Standard Electrical Tool Co., Cincinnati, O.
Strand Co., N. A., 6001 N. Lincoln St., Chgo
U. S. Electrical Tool Co., Cincinnati, Ohio
Vim Tool Co., 149 Broadway, New York
Winterhoff Tool & Mch. Co., Elkhart, Ind.

Grinding Machines, Snagging

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Hisey-Wolf Machine Co., Cincinnati, Ohio
Jarecki Mch. & T. Co., Grand Rapids, Mich.
Lehmann Machine Co., St. Louis, Mo.
U. S. Electrical Tool Co., Cincinnati, Ohio

Grinding Machines, Surface

American Machine Tool Co., Hackettstown, N. J.
Gallmeyer & Livingston Co., Grand Rapids, Mich.
Illinois Machine & Mfg. Co., LaSalle, Ill.
Stevens Inc., John B., 306 Hudson Street, New York
Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Tap

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Oliver Instrument Co., Adrian, Mich.

Grinding Machines, Tool

Hisey-Wolf Machine Co., Cincinnati, Ohio
Oesterlein Machine Co., Cincinnati, Ohio
Standard Electrical Tool Co., Cincinnati, O.
Taylor & Fenn Co., Hartford, Conn.

Grinding Machines, Tool Post

Hisey-Wolf Machine Co., Cincinnati, Ohio

Grinding Machines, Universal

Gallmeyer & Livingston Co., Grand Rapids, Mich.
Thompson Grinder Co., Springfield, Ohio

Grinding Machines, Vertical Spindle

Hisey-Wolf Machine Co., Cincinnati, Ohio

Grinding Wheel Dressers

Hisey-Wolf Machine Co., Cincinnati, Ohio

Hack Saw Blades

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Fearless Machine Co., Racine, Wis.
Racine Tool & Machine Co., 1754 State Street, Racine, Wis.

Hack Saw Machines

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Fearless Machine Co., Racine, Wis.
Racine Tool & Machine Co., 1754 State Street, Racine, Wis.

Hammers, Chipping and Chalking

Canton Pneumatic Co., Canton, Ohio

Hob Grinders

Triplex Machine Tool Corp., 60 Church St., New York

Hoists, Portable

Canton Foundry & Machine Co., Canton, Ohio
Hagen, H. J., 109 Lafayette St., New York

Hose Couplings

Hunt & Son, C. B., Salem, Ohio

Hydraulic Machinery

Laurie Mfg. Co., 665 Washington, Chicago

Index Centers, Single and Multi Spdl.

Fay & Scott, Dexter, Maine
Stevens Inc., John B., 306 Hudson Street, New York

Indicators, Dial

Federal Products Corp., Providence, R. I.
Standard Gage Co., Poughkeepsie, N. Y.

Jigs and Fixtures

American Tool Works, Inc., Hartford, Conn.
City Machine & Tool Works, Dayton, Ohio
John H. Dorman, West New York, N. J.
Hartford Special Mch. Co., Hartford, Conn.
LaPorte Machine & Tool Co., LaPorte, Ind.

Keyseating Machines

Burr & Son, John T., Brooklyn, N. Y.
Davis Keyseater Co., Rochester, N. Y.
National Machine Tool Co., Cincinnati, Ohio

Lathe Accessories and Attachments

The Co-Operative Mch. Co., Cleveland, O.
Fay & Scott, Dexter, Maine
Reed-Prentice Corp., Worcester, Mass.
Sidney Machine Tool Co., Sidney, Ohio

Lathe Turrets

The Co-Operative Mch. Co., Cleveland, O.

Classified Finding Index

Lathes, Bench

Ames Co., S. C. Waltham, Mass.
Hardinge Brothers, Inc., 1770 Bartsan Ave.,
Chicago

Lathes, Engine

American Tool Works Co., Cincinnati, O.
Bradford Machine Tool Co., Cincinnati, O.
Carroll & Jamieson Mch. Tool Co., Batavia, O.
Fay & Scott, Dexter, Maine
Hardinge Brothers, Inc., 1770 Bartsan Ave.,
Chicago

LeBlond Mch. Tool Co., R. K., Cincinnati, O.
Lehmann Machine Co., St. Louis, Mo.
McCabe Lathes & Machinery, Corp., J. J.
149 Broadway, New York
Monarch Machine Tool Co., Sidney, O.
Merritt Machine Tool Co., Cincinnati, Ohio
Porter-Cable Machine Co., Syracuse, N. Y.
Rahn-Larson Co., Cincinnati, Ohio
Reed-Prentice Corp., Worcester, Mass.
Sidney Machine Tool Co., Sidney, Ohio
Springfield Machine Tool Co., Springfield, O.

Lathes, Extension Bed Gap

LeBlond Mch. Tool Co., R. K., Cincinnati, O.
Rahn-Larson Co., Cincinnati, O.

Lathes, Gap

LeBlond Mch. Tool Co., R. K., Cincinnati, O.

Lathes, Hand

Stevens Inc., John B., 306 Hudson Street,
New York

Lathes, Hydraulic Automatic

Monarch Machine Tool Co., Sidney, Ohio

Lathes, Manufacturing

LeBlond Mch. Tool Co., R. K., Cincinnati, O.
Lehmann Machine Co., St. Louis, Mo.
Monarch Machine Tool Co., Sidney, Ohio
Reed-Prentice Corp., Worcester, Mass.
Sundstrand Machine Tool Co., Rockford, Ill.

Lathes, Precision

Bradford Machine Tool Co., Cincinnati, Ohio
LeBlond Mch. Tool Co., R. K., Cincinnati, O.
Lehmann Machine Co., St. Louis, Mo.
Monarch Machine Tool Co., Sidney, Ohio
Reed-Prentice Corp., Worcester, Mass.

Lathes, Short Bed

Porter-Cable Machine Co., Syracuse, N. Y.
Reed-Prentice Corp., Worcester, Mass.
Sidney Machine Tool Co., Sidney, Ohio

Lathes, Tool Room

Bradford Machine Tool Co., Cincinnati, Ohio
Lehmann Machine Co., St. Louis, Mo.
Monarch Machine Tool Co., Sidney, Ohio
Reed-Prentice Corp., Worcester, Mass.

Lathes, Turret

Bradford Machine Tool Co., Cincinnati, O.
Lehman Machine Co., St. Louis, Mo.
Monarch Machine Tool Co., Sidney, O.

Lubricator, Automatic

Norgren Co., Carl, A., Denver, Colo.

Lubricators, Engine

Madison-Kipp Corporation, Madison, Wis.

Lubricators, Machine Tool

Madison-Kipp Corporation, Madison, Wis.

Mandrels, Expanding

Nicholson & Co., W. H., Wilkes-Barre, Pa.
Western Tool & Mfg. Co., Springfield, O.

Mandrels, Solid

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Millers, Tilted Rotary and Offset

Oesterlein Machine Co., Cincinnati, Ohio

Milling Attachments

Adams, Oorden R., Rochester, N. Y.
Burke Machine Tool Co., Conneaut, Ohio
Kearney & Trecker Corp., Milwaukee, Wis.
LeBlond Mch. Tool Co., R. K., Cincinnati, O.
Porter-Cable Machine Co., Syracuse, N. Y.
Reed-Prentice Corp., Worcester, Mass.
Stevens Inc., John B., 306 Hudson Street,
New York
Taylor & Fenn Co., Hartford, Conn.

Milling Machine Spacing Washers

The Co-Operative Mch. Co., Cleveland, O.

Milling Machine Work

Sherman-Klors Co., 2633 W. 47th St., Chgo.

Milling Machines, Automatic

Oesterlein Machine Co., Cincinnati, Ohio

Milling Machines, Bench

Ames Co., S. C. Waltham, Mass.
Burke Machine Tool Co., Conneaut, Ohio
Sundstrand Machine Tool Co., Rockford, Ill.

Milling Machines, Cam

Frew Machine Co., Philadelphia, Pa.

Milling Machines, Hand

Burke Machine Tool Co., Conneaut, Ohio
Frew Machine Co., Philadelphia, Pa.
Sundstrand Machine Tool Co., Rockford, Ill.
Superior Machine & Eng. Co., Detroit, Mich.
U. S. Machine Tool Co., Cincinnati, O.

Milling Machines, Horizontal

Oesterlein Machine Co., Cincinnati, Ohio

Milling Machines, Manufacturing

Kearney & Trecker Corp., Milwaukee, Wis.

Milling Machines, Offset

Oesterlein Machine Co., Cincinnati, Ohio

Milling Mch., Oil Grooves for Half Bearings

Lehmann Machine Co., St. Louis, Mo.

Milling Machines, Plain

Burke Machine Tool Co., Conneaut, Ohio
Kearney & Trecker Corp., Milwaukee, Wis.
LeBlond Mch. Tool Co., R. K., Cincinnati, O.
Oesterlein Machine Co., Cincinnati, Ohio
Sundstrand Machine Tool Co., Rockford, Ill.

Milling Machines, Portable

Pedrick Tool & Machine Co., Philadelphia

Milling Machines, Rotary

Oesterlein Machine Co., Cincinnati, Ohio

Milling Machines, Spline

Taylor & Fenn Co., Hartford, Conn.

Milling Machines, Universal

Kearney & Trecker Corp., Milwaukee, Wis.
LeBlond Mch. Tool Co., R. K., Cincinnati, O.
Oesterlein Machine Co., Cincinnati, Ohio

Milling Machines, Vertical

Burke Machine Tool Co., Conneaut, Ohio
Kearney & Trecker Corp., Milwaukee, Wis.
LeBlond Mch. Tool Co., R. K., Cincinnati, O.
Oesterlein Machine Co., Cincinnati, Ohio
Reed-Prentice Corp., Worcester, Mass.
Taylor & Fenn Co., Hartford, Conn.

Mills, Adjustable Hollow

Adams, Oorden R., Rochester, N. Y.
Genesee Mfg. Co., Inc., Rochester, N. Y.

Name Plates, Etched and Stamped

Schwerdtle Stamp Co., Bridgeport, Conn.

Classified Finding Index

Nut Setters, Electric

Hisey-Wolf Machine Co., Cincinnati, Ohio
Vim Tool Co., 149 Broadway, New York

Oil Cups

Tucker, W. W. & C. F., Hartford, Conn.

Pins, Leader And Dowel

Baumbach Mfg. Co., E. A., 1912 So. Kilbourne Ave., Chicago
Dandy Machine Specialties, Inc., 2116 S. 62nd Ave., Chicago

Pipe Bending Machines

Fedrick Tool & Machine Co., Philadelphia

Planers, Valve Seat, Portable

Fedrick Tool & Machine Co., Philadelphia

Planing Machines

Cleveland Planer Co., Cleveland, Ohio

Point Thinning Machines

Oliver Instrument Co., Adrian, Mich.

Polishing and Buffing Machines

Cincinnati Electrical Tool Co., Cincinnati, O.
Excelsior Tool & Mch. Co., E. St. Louis, Ill.
Hisey-Wolf Machine Co., Cincinnati, O.
Mall Tool Co., 7730 S. Chicago Ave., Chicago
New Britain Machine Co., New Britain, Conn.
Standard Electrical Tool Co., Cincinnati, O.
U. S. Electrical Tool Co., Cincinnati, Ohio

Presses, Arbor

Atlas Press Co., Kalamazoo, Mich.
Laurie Mfg. Co., 545 Washington, Chicago
Nicholson & Co., W. H., Wilkes-Barre, Pa.
Sheldon Machine Co., 2253 Cottage Grove Ave., Chicago
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Lathe, 9" x 3' Shepard, speed.
Lathe, 14" x 8' Monarch, t. a., q. c. g.
Lathe, 14" x 6" Lodge & S., q. c. g.
Lathe, 15" x 8' Von Wyck, q. c. g.
Lathe, 16" x 8' Hendey, q. c. g.
Lathe, 18" x 8' L. & S. sel. hd. m. d. t. a.
Lathe, 18" x 10' L. & S., d. c. motor.
Lathe, 26" x 10' Bridgeford q. c. g. pan.
Lathe, 21" x 12' LeBlond, g. h., pan.
Lathe, 26" x 16' Bridge., g. h., t. a., m. d.
Lathe, 16" x 24' LeBlond, chuck, t. a.
Lathe, 36" x 64' Bridgeford gun bor.
Lathe, pattern maker's, 24" x 11".
Miller, vert. 2-A Becker rot. table.
Miller, vertical, No. 3 Becker, cone.
Miller, No. 6-B Becker, pl. horiz.
Miller, 18" Cincinnati, plain horiz.
Miller, No. 4 Brown & Sharpe, univ.

Motor, 1 h. p. 1/60/220/600—1200 rev.
Motor, 1½ h. p. 110 v. d. c., 1200 r. p. m.
Motor, 5 h. p. 220 v. d. c., 500/1500 rev.
Motor, 5 h. p. 3/6/220/1200 r. p. m.
Motor, 5 h. p. 500 v. d. c., 1500 rev.
Motor, 7½ h. p., 3/60/220/1800.
Motor, 10 h. p. a. c., 3/60/220/1740.
Motor, 15 h. p. 220 v. d. c., 300/1200 rev.
Motor, 20 h. p. 220 v. d. c., 350/1050 rev.
Motor, 25 h. p. slip rg., 3/60/220/1160.
Nibbling mche., Cambell 6" m. d.
Paperslitter, 15" Jacques, bench.
Pipe machine, 4" Saunders, m. d.
Pipe machine, 12" Williams, s. p. d.
Press, No. 3A Bliss, adj. table.
Press, No. 3 Bliss, punch type.
Press, No. 14 Stiles (Bliss) plain.
Press, C-3 Ferracute, o. b. i., plain.
Presses, foot, No. 87 Bliss, pendulum.
Presses, foot, No. F-1 on stand.
Press, foot, No. 162 Ferracute.
Press, D. G. 62, Ferracute, s. s.
Press, No. 6 Perkins, s. s., 4000 lbs.
Presses, No. 87 Niagara, screw.
Pump, Centrifugal, 4" disch., m. d.
Punch, 30" thrt., 1" x 1" m. d., s. e.
Punch, Cleveland E.F., 24" tht. m. d.
Punch, Cleveland E.F., 48" tht. m. d.
Punch, Rapid, 20" tht., 1" x 1" m. d.
Punch & s., No. 23 Marvel comb., h.
Punch and shear, single end 12"
throat, 4½" motor drive.
Punch & shear, s. e., 36" & 48" thrt.,
1" x 1" m. d.
Punch & shear, 48" thrt., 1" x 1" m. d.
Punch & sh., d. e., 12" thrt. 1x1" belt.
Riveter, Grant 101, cap. 3/16" m. d.
Riveter, 1-AA. High Speed, m. d.
Riveter, 1" Shuster rotary, belt.
Rolls, 50" x 4", hand power.
Saw, Burke, 12" blade, capacity.
Saw, cold, Espen-Lucas, cap. 7" rd.,
Saw, shaping, 6x6 Peerless with mtr.
Shaper, 16" Cincinnati, sgl. grd.
Shaper, 20" & 16" Cin., b. g., crank.
Shaper, 24" Ohio, shifting belt.
Shaper, 24" Gould & Eberhardt b. g.
crank.
Shaper, 24" S. & M. and Steptoe.
Shaper, 26" Kelly, back geared crk.
Shear, 36" x 3/16" power, belted.
Shear, 42" x 1" Niagara, 16" gap.
Shear, 1" Lennox rotary throatless.
Shear, rotary, 12" thrt., cap. 10 ga.
Shear, rotary, No. 2 Niagara, hand.
Shear, rotary bevel, 1½", m. d.
Shear, squaring, 8" x 14 ga. power.
Shear, squaring, 60" x 14 ga. Canton.
Shear, squaring, 12" x 14 ga. (new).
Shear, foot squaring, 30" x 18 ga.
Shear, power squaring, 30" x 18 ga.
Slotter, 15" Dill, for motor drive.
Turbo-generator, 500 kw, 3/60/2300.
Turret lathe, 13" Gisholt, 24" h. s.
Turret No. 4 W & S., g. f. h., w. f.

USED AND REBUILT MACHINERY

FOR SALE BY

Nelson Machinery Co., - 123 N. Pearl St., Green Bay, Wis.

Pipe machine, No. 13 Jarecki 2½ to 8", quick opening adj. dies.
Press, 48", 200 ton Niles hydraulic wheel press, distance between ram and resistance head 8' 4"; arranged for either belt or geared motor drive,
Riveter, No. 81 Grant rotary, ½ h. p., 3 ph., 60 cy., 220 v., vertical motor.

FOR SALE BY

J. Bleser Mfg. Co., - 16th & Madison Sts., Springfield, Illinois

Grinder, Micro cylinder.
Grinders, Landis, Nos. 1½ & 2 univ.
Lathes, Rivett bench full equip., (2).
Lathe, Prentiss 25"x16", s. c. g.
Lathe, Greaves-K., 16"x8", q. c. g.
Pipe machines, 2", 4", 6" & 8".
Miller, Transit heavy duty.
Millers, No. 3 Burke, Rockford.
Screw machine, No. 4 Warner & S.
Shapers, Smith & Mills, 16", 12".

FOR SALE BY

Reliance Machinery Sales Company

1405 Brighton Road, - N. S. Pittsburgh, Pa.

Air comp., 8"x8" Herron & Bury.
Automatics, No. 53 National-Acme.
Bolt cutters, ½", ¾", 1-½ single head.
Boring mill, 34" Colburn.
Boring mill, 36" Niles 2 heads.
Boring mill, 51" Bullard, 2 heads.
Bulldozers, No. 27 Williams-White.
Broach, No. 3 LaPointe.
Car wheel borer, 42" Ridgeway.
Centering mche., Cadillac dbl. end.
Drills, 10"-12" bench type, m.d., new.
Drills, 15, 20 21" floor type, b. d. or m. d.
Drills, 20" and 21" back geared, new.
Drills, 23", 24", 28" sliding head.
Drill, 36" T. & F. sensitive radial.
Drill, Model "F" Turner turret.
Drill, P. & W. multiple, 12-1" spdis.
Drill, No. 25 Foote-Burt hvy. duty.
Drill, No. 4 Colburn mfg., 4-spdis.
Drill, D-5 Colburn heavy duty.
Gear cutter, No. 1 Bilton.
Grinder, 7½ h. p. Ransom, 220-3-60.
Grinder, Oliver drill, ½" cap., m. d.
Grinder, 12"x24" Modern plain.
Grinder, No. 1 LeBlond univ. cutter.
Grinder, No. 1 Norton univ. cutter.
Grinder, No. 1 Univ. tool & cutter.
Grinder, No. 2½ Bath universal.
Hammers, No. 2-A, h. d. Hi-Speed, m. d., 3 ph., 60 cy., 220 v., (4).
Hammer, No. 1AA High Speed, m. d.
Hammer, 300 lb. Bradley cush. helve.
Hoists, electric, 1 & 2 ton, d.c. mtrs.
Lathe, 14"x6" L. & S. g. h., s. p. d.
Lathe, 14"x6" Rockford q.c.g.d.b.g.
Lathe, 16"x6" Blount patternmakers.
Lathe, 18"x6" Springfield brass.
Lathe, 16"x8" Hendey, t. a., b. d.
Lathe, 12"x10" Davis tool rm., q.c.g.
Lathe, 14"-28" Fay & Scott gap.
Lathe, 17"-37"x8" Fay & Scott gap.
Lathe, 18"x10" W.-B., g. h., s. p. d.
Lathe, 27"x18" Reed, bargain.
Lathe, 48"x19' 8" Betts-Bridgford.
Lathe, 30"x16" L. & S. q. c. g.
Lathe, 3"x36" J. & L. flat turret.
Lathe, 18" Libby turret, s. p. d.
Lathe, 21" Gisholt turret, (2).
Lathe, No. 2 Warner & Swasey turret.
Lathes, No. 4 W. & S. tur., g. f. h.
Millers, No. 1 Cleveland plain, (2).
Miller, No. 2A Milwaukee plain.
Millers, No. 2 Ohio plain, (2).
Miller, No. 3 Cincinnati plain, m. d.
Miller, No. 5-B Becker-Brainerd pl.
Miller, 35"x24"x10" Newton slab.
Miller, No. 2 Cincinnati vertical.
Pipe machine, Merrill, 2½" to 12".
Pipe machine, 6" Jarecki, m. d.
Pipe machine, new 2-P. 2" Williams.
Planer, 22"x22"x50" New Haven lhd.
Planer, 24"x24"x8" Powell, 1 head.
Planer, 30"x30"x8" Powell, 1 head.
Planer, 33"x33"x12" Cincinnati, 2 hds.
Planer, 36"x36"x12" Cinti. 2 heads.
Planer, 48"x38"x12" Gray, reversible motor drive, 3 heads.
Press, No. 3 Adriance o.b.i., 3½" str.
Presses, 3P Ferracute (2).
Presses, Nos. 19, 20 & 21 Bliss, new.
Presses, Nos. 3, 4, 5 and 6 Consolidated, new.
Presses, No. 20 Bliss, 3" stroke.
Press, 50 ton Lourie hydraulic.
Punch, Wickes, 48" thr., cap. 1½"x1".
Punch, No. 2 H. & J. horizontal.
Radial drill, 4' Fosdick s. p. d., g. b.
Radial drill, 4' American cone drive.
Saw, Clark metal band.
Saw, No. 12 Higley cold, cap. 5" rd.
Seamers, Bliss, Leffer & Max Ams.
Shaper, 25" Smith & M., g. b., s. p. d.
Shapers, 24" & 32" G. & E., m. d., b. g.
Shear, 10"x14 ga. Bertsch, b. d.
Shear, 36"x16 ga. Stoll power squar.
Shear, No. 0 H. & J. guillotine, b. d.
Shear, No. 103 Bliss circle.

Our warehouse is full of bargains. What have you for sale?

USED AND REBUILT MACHINERY

FOR SALE BY

West Penn Machinery Company

1208 House Building,

Pittsburgh, Pa.

Air comp. 4"x4" Union, 16 cu. ft.
Air comp. 4"x4" Curtis, 25 c. f.
Air comp., 8"x8" Bury "BB", 79 c.f.
Air comp., 8"x9" Hall, 69 c. f.
Air comp., 14x9x12" Ing.-R. 446 c. f.
Bolt cutters, 14" Landis, dbl. head.
Bolt cutter, 14" Landis, 3hds., m. d.
Boring mill, 36" Bullard, side head.
Boring mill, 42" Bullard, 2 heads.
Boring mill, 60" Bullard, m. d.
Boring mill, 72" Bullard, m. d.
Boring mill, 10'-16" Betts, m. d.
Boring mill, horiz. No. 0 G. & L.
Boring mill, floor type, 54" D. & H.
Boring mill, 34" bar Rochester, m. d.
Brake, 6"x16 ga. Robinson.
Brake, 48"x3/16" Dreis & Krump.
Brake, 12"x4" Dreis & Krump, m. d.
Brake, press type, 10' 6" Ohl, 5/16".
Bulldozers, Nos. 2, 4, 6, 28, 29 & 30.
Crane, elec. 5-ton Case, 56' span.
Dieing mches., 25 & 50 ton H. & W.
Drill, mult. apdl. No. 30 Natco m. d.
Drills, 14" to 38", upright.
Drills, radial, 24", 34", 5' and 10'.
Drill, radial, 6' American universal.
Flanger, McCabe, 4" capacity.
Gear cutter, 84" Cincinnati, m. d.
Gear planers, 24", 36" & 48" Gleason.
Generator set, 500 k.w. 220v. 3-60 cy.
Grinder, radial, 14", 220 v. 3-60 cy.
Grinder, crankshaft, 16"x72" Landis.
Grinder, surface, No. 16 Blanchard.
Grinder, surface, 14" Arter.
Grinder, tool, No. 2 Walker.
Hammer, blacksmith, power, 35-lbs.
Hammer, 80-lb. Bradley, cush. helve.
Hammers, Nos. 3-B, 4-B, 4-N Nazel.
Hammers, steam, 600 lb. to 6000 lb.
Jacks, 35-ton Barrett, ball bearing.
Jointer, 24" Fay & Egan.
Lathes, 10" to 60".
Lathe, 10"x5' Star, h. s., chuck, b. d.
Lathe, 16"x6" Hendey.
Lathe, 16"x6" LeBlond, q. c. g.
Lathe, 20"x8" Hendey, tie bar.
Lathe, 26"x16" Bridgeford, grd. hd.
Lathe, 36"x18" Bridgeford, g. h., m. d.
Lathe, 52"x34" Pittsburgh, m. d.
Lathe, Lo-Sw., 34"x60" Fitchburg.
Lathe, 18"x6" Fox brass.
Lathe, turret, No. 6 Warner & S.
Lathe, tur., 34" Gisholt, Model K.
Lathe, turret, 24" Steidle, 64" hole.
Lathe, turret, No. 8 Warner & S.
Lysholm tables, 72"x30".
Miller, hand, United States 6"x24".
Miller, plain, No. 3 Cincinnati.
Miller, plain & vert. No. 5 Ingersoll.
Miller, slab, Ing. 46x30x20 4hds. m. d.
Miller, thread, 10" Lees-Bradner.
Miller, univ., No. 4 B. & S. 12" d. h.
Miller, vert. Taylor & Fenn, 18x6".

Miller, vert. No. 5 Brown & Sharpe.
Multi-aut-matics, 12" Bullard, m. d.
Pipe machine, 2" Landis, b. d.
Pipe machine, 6" Jarecki, m. d.
Pipe machine, 8" Oster, b. d.
Pipe machine, 8" Williams, m. d.
Pipe mche., 16" Landis, 2 hds. s.p.d.
Planer, 96"x96"x18" Ridgway, 4 hds.
Planer, 48"x42"x16" D. & H. o. s.
Planer, rotary, 48" Niles, m. d.
Press, arbor, No. 5 Greenerd.
Press, hyd., 50-ton Lourie.
Press, s. s. 13"x19 1/2", 2" stroke.
Press, geared, No. 34 Toledo.
Press, geared, No. 4 Bliss.
Press, No. 78 Bliss, t. r. 10" stroke.
Press, 36" Toledo, dbl. crk. 2" str.
Press, No. 94-P Toledo, 42"x196".
Press, wheel, 200-ton Niles.
Punch, 24" beam, Cleveland.
Punch, hor., Cleveland, 1" thru 1".
Punch & sh. "EF" Cleve. 24" arch jaw
Punch, No. 1 L. & A. 30" thr., 1 1/2"-1".
Punch, type "A" L. & A. d. e., 2"-1 1/2".
Riveter, Allen, 36", 1" rivet.
Riveting hammer, 3" high speed.
Rivet spinner, 5/16" Grant, 6" thr.
Rolls, angle bend, 2"x2"x4" Bertsch.
Rolls, bending, 54"x4" Cincinnati.
Rolls, bending, 12"x4" Wickes, m. d.
Rolls, bending, 32"x4" Niles.
Saw, band, 33" Fay, b. d.
Saw, frict. Model 1-A Hunter, 24".
Saw, friction, Nos. 2 & 3 Ryerson.
Saw, cold, 48" Newton, m. d.
Saw, hot, 54" Mesta sliding frame.
Shapers, 16", 20", 24", 34", 36" G. & E.
Shaper, 24" Potter & J. universal,
motor drive.
Shear, angle, 6"x6"x4" Cleveland.
Shear, alligator, Lewis 1 1/2" sq. b. d.
Shear, alli., No. 5 Carlin, 3 1/2" sq.
Shear, bevel, Lennox 1 1/2".
Shear, circle, No. 1104 Bliss.
Shear, gang splitter, 225-A, 36" Bliss.
Shear, guil. National 1 1/2" rd. b. d.
Shear, plate, 49"x2" United, m. d.
Shear, plate, 120"x2" United, m. d.
Shear, sq., 20"x16 ga. Bliss power.
Shear, 36"x16 ga. Niagara, b. d.
Shear, 12"x14 ga. Peerless, 95¢ new.
Shear, 12"x4" Wheeling, 31" gap,
motor drive.
Shear, rotary, Ryerson, 26" gap, 3".
Shr., rot., Newbold, 40" gap, 1/2" cap.
Straightener, No. 1 Abramson 1 1/2" r.,
Straight'r, 48" United, 16 ga. 13 rolls.
Straightener, 60" Nat. 14 ga. 17 rolls.
Straightener, H. & J. 48"x4" 8 rolls.
Straightener, Phila., 6"x3" 7-rolls.
Swaging machine, No. 3 Langelier.
Upsetters, 1" to 5".
Welders, spot and butt.

USED AND REBUILT MACHINERY

FOR SALE BY

Badger-Packard Mchy. Co., 133-9 W. Water St., Milwaukee, Wis.

Boring mill, 76" Bullard, vertical.....	\$1400.
Drill press, No. 2 Colburn.....	400.
Lathe, 24x10 Hendey, rebuilt.....	800.
Miller, No. 2 Cincinnati, plain, all geared, single pulley drive, rebuilt.	950.
Planer, 36x24x8' Pease.....	750.
Planer, 42x42x10' Pond.....	1100.

FOR SALE BY

M. A. Wertman Machinery Co., 427 Penton Bldg., Cleveland, Ohio

Arbor press, No. 3½ Greenerd.	
Automatic, Cleveland Model A, 3"	
Automatic, Potter & Johnston 5-A m. d., late machine, perfect condition.	
Automatic, Cleveland Model A, 3½"	
Automatic, Cleveland Model A, 1½-4"	
Brake, 8'x16 gauge Robinson power brake, new condition.	
Broaching, No. 3 La Pointe Hudson.	
Drill, radial, 5' Fostick motor drive.	
Grinder, internal, Taylor & Fenn, power feed and chuck.	
Hammer, High Speed riveting No. 3-A motor drive.	
Lathe, Sundstrand 9'x24" geared head, ball bearing, m. d., 98% new.	
Milling machine, Brown & Sharpe No. 3 plain, power quick traverse.	
Press, Cleveland No. 52 s. s. trim. with side shear, new condition.	
Press, Cleveland No. 6-1, o. b. i. brand new, weight 3300 lb.	
Squaring shear, power, 36" 16 gauge capacity.	
Squaring shear, Niagara No. 396 power, 8' 11 gauge capacity.	
Thread miller, Coulter hob thread miller, perfect condition.	
Turret lathe, No. 2 Bardons & Oliver, bk. gear and power feed, lot of collets.	
Turret lathe, No. 6 Warner & Swasey, power feed turret and cross slide.	
Welder, arc 300 amp. Lincoln, 220 volt 60 cycle, like new.	
Welder, spot, 112 Jr. Federal, 220 volt 60 cycle, 12" throat.	
Welder, spot, 25 k. v. a. Gibb, 36" throat.	

FOR SALE BY

H. L. Morton Machinery Co., 1078 Carlyon Road, Cleveland, Ohio

Air compressor, 7½"x6" horizontal.	
Die sinker, Jackson, with cherrying head.	
Drill, Sigourney, 2-s. indle. No. 2 taper.	
Drill, Avey, high-speed, ball-bearing bench drill, No. 1 taper.	
Drill, Rockford, 22" back geared, power feed.	
Drill, Baush, multiple 10-spindle, 8 attached, No. 2 taper, 30" round head.	
Drill, Natco, No. 21-D multiple spindle, No. 1 taper, rect. head 31"x20".	
Grinder, Gardner, No. 6 ball-bearing, 20" discs.	
Grinder, Gardner, No. 7 plain-bearing, 30" discs.	
Lathe, Monarch, 16"x8'. quick change gear.	
Lathe, Boye & Emmes, 18"x8', quick change gear, taper attachment.	
Milling machine, No. 5 Cincinnati, plain.	
Milling machine, U. S. hand miller.	
Milling machine, No. 3 Cincinnati, vertical, motor drive.	
Planer, Whitcomb, 24"x24"x6'.	
Punch press, No. 4 Toledo, o. b. i., 2½" stroke.	
Riveter, Grant, spinning, 5/16" capacity.	
Riveter, Hi-Speed, No. 3-A, motor drive.	
Seamer, Niagara, No. 4, double.	
Screw press, Perfection, 30 ton.	
Shaper, 15" Pratt & Whitney.	
Turret lathe, Warner & Swasey, No. 4, f. h., b. f., power feed to turret.	
Turret lathe, Warner & Swasey, No. 2 hollow-hex.	
Welder, spot, Toledo, cap. 2½" sheets, 27" arm.	
Welder, Federal, No. 118, Jr., cap. 2½" sheets, 18" arm.	

USED AND REBUILT MACHINERY

FOR SALE BY

Taylor-Hall Welding Corporation, 99 Hope Ave., Worcester, Mass.

WELDERS

Toledo No. 306 seam spot welder.	Winfield B50SA, butt welder, cap. $\frac{1}{2}$ "
Taylor-Winfield 2 k. w. spot welder.	Thomson 2A automatic butt welder, capacity $\frac{1}{2}$ "
Taylor-Winfield 7 $\frac{1}{2}$ k. w. spot welder, motor driven.	Thomson 7A automatic butt welder, capacity $\frac{1}{2}$ "
National 35 k. w. spot welder.	Thomson 2C butt welder, cap. $\frac{1}{2}$ "
Thomson 15 k. w. spot welder.	Winfield B-103, butt welder cap. $\frac{1}{2}$ "
Acme 5 k. w. spot welder.	Toledo 8B, butt welder, cap. $\frac{1}{2}$ "
Acme 12 k. w. spot welder.	Toledo 10B butt welder, cap. $\frac{1}{2}$ "
National 8 k. w. spot welder.	
Thomson 15 k. w. spot welder, m. d.	

New machine guarantee with every welder.

FOR SALE BY

Chas. Molitor Machinery Co., 118-124 S. Clinton St., Chicago, Ill.

MILLING MACHINES.

No. 2 Kempsmith Maximillier univ.	No. 3 Hendey plain.
No. 2 B. & S. univ., sgl. pulley.	No. 3 Kempsmith plain.
No. 3 Brown & Sharpe universal.	No. 3 Rockford hi-power.
No. 3 Becker-Brainard universal.	Nos. 1 $\frac{1}{2}$, 2A, 3-B heavy Brown & S.
No. 4 Becker-Brainard universal.	45" Niles double head boring mill.
No. 25 Becker plain.	24" Binnse horizontal boring mill.
No. 3B Milwaukee plain, dbl. arm.	10 different sizes hand millers.

LATHES.

24"x12' Bradford q. c. g.	14"x8'-12"x6' Hendeys, taper collets
20"x 8' Monarch q. c. g.	16"x 8' Springfield q. c. g., inc. tur.
18"x 8' Morris semi d. b. g.	14"x 6' Monarch q. c. g.
18"x 8' Greaves-Klusman q. c. g.	14"x 6' Hamilton q. c. g.
16"x 8' Cincinnati, q. c. g., taper.	14"x 6' Hendey taper, draw spindle and relieving attachment.
18"x 8' Monarch q. c. g.	14"x6' Davis q. c. g., taper.
16"x 8' LeBlond plain, taper.	Hardinge Mosley-Elgin precision.
16"x6' Chard quick change gear.	

GRINDERS.

No. 2 Norton universal (2).	65 Heald cylinder incl. a. c. motor.
No. 13 Brown & Sharpe univ. (2).	No. 60 Heald cylinder.
No. 3 Brown & Sharpe universal.	No. 6 Heald internal.
No. 3 Wilmarth & Morman surface.	Bryant internal chucking.
Nos. 14 and 16 Brown & Sharpe.	No. 3 $\frac{1}{2}$ E Van Norman external.
4"x12" Norton self-contained.	No. 3 $\frac{1}{2}$ Van Norman internal.

RADIALS AND DRILLS.

5' Reed-Prentice.	4 and 6-spindle Aveys (4).
4' Cincinnati-Bickford.	4-spindle No. 3 Leland-Gifford (4).
4-spindle Rockford, 2' capacity	1, 2, 3-spdl. No. 1 Leland-Gifford.
4-spindle Henry & W., large table.	No. 1 Leland-Gifford tapping attach.
1 and 2-spindle Sippis.	No. 2 Leland-Gifford large table.

PRESSES AND SHEARS.

No. 5 toggle presses, roller feed.	4' Kutscheid pwr. sq., 14 ga.
Nos. 1, 2, 3, 4 Walsh, Rockford,	5' Bertsch pwr. sq., 15" cap. 1/16 ga.
Amer. Can. Consolidated presses.	8' Toledo sq. shr., 15" cap. 3/16" ga.
6' Niagara power squaring shear.	20", 24", 60" sliding shears.

SHAPERS AND PLANERS.

16" Rockford geared, crank.	20" Rockford back gear.
24" Milwaukee geared crank.	22"x5' American single head.

SCREW MACHINES AND TURRET LATHES.

Nos. 1, 2, 3, 4, 6 Warner & Swasey.	14" & 24" Fosters, univ. and plain.
1", 1 $\frac{1}{2}$ ", 2" Cleavelands.	No. 1-B Foster univ., grd. hd. (3).
1", 4-sp. Gridleys, auto. model G.	Large variety of smaller Fosters, etc.

MISCELLANEOUS.

Bolt cutters, $\frac{1}{2}$ "-2" Acme & Landis.	Tappers, $\frac{1}{2}$ Garvin, Pratt & Whitney.
Keyseaters, Nos. 0 & 2 Becker.	Tapper, 1" Gould & Eberhardt.
Keyseaters, No. 2 Davis.	Tapper, No. 2X Garvin auto.
100 Warner & Swasey, Potter & Johnston, box, boring tools, die heads, etc.	

USED AND REBUILT MACHINERY

FOR SALE BY

Brown Machinery Co., 2333 N. 9th St., St. Louis, Mo.

Drills, 20" Champion; C & O, Superior; 24", 32" Mechanics; 24" American.
Drills, radial, 3' Prentice; 4' Bickford.
Drill, Moline 68-D, 4-sp. Hole Hog.
Gear hobber, Gould & Eberhardt.
Grinders, Safety No. 302 edge, No. 6 Besly; No. 202 Badger.
Lathes, 16x6 Monarch; 18x8 Lodge & Shipley; 18"x8" Prentice, grd. hd.; 20x12 Lodge & Shipley; 26x10 Putnam; 30x10 Blaisdell.

Millers, No. 4 Hendey; No. 7H Becker; No. 3 Fox; No. 3 Burke.
Press, arbor, No. 3 A Geier; No. 3 Greenerd.
Planer, 42"x42"x10' Pond.
Press, Lorie hydraulic, 200 ton.
Punch, Rock River L, cap. 1" in 1".
Riveters, Grant 4-V-3 motor drive; No. 2 rotary, motor drive.
Shaper, 20" Smith & Mills.
Shear, 50" Excelsior power, 10 ga.; No. 10 Excelsior double cutting;

This is only a portion, as we have several hundred good used machines in our stock. Send us your inquiries for interesting quotation on machine shop or sheet metal working equipment.

FOR SALE BY

McDonald Machinery Co., 1531-33 N. Broadway, St. Louis, Mo.

Arbor presses, Eames No. 6.
Boring mill, Barrett 5" horiz.; Lucas No. 31 horiz., 24".
Boring mills, 4 Bullard 42" low price.
Brake, D. & K. 3', box and pan.
Cut-off mchs., 4 Davis 6" capacity.
Demagnetizer, Walker.
Drill, Moline 4-spindle.
Drills, Baker, heavy duty (2).
Drills, Leland-G 1-sp. h.s., b.b. floor.
Drills, H. & W. 4-sp., h.s., b.b., Sipp 1-spdl., h.s., b.b., H. & W. 2-spdl.
Drills, 20", 24", 26" & 28" b. g., & tap.
Drills, Prentice 3'; Bickford 4' radials.
Gear hobber, Gould & E. 24".
Grinders, Landis piston, motor drv.
Grinder, Heald No. 60 cylinder.
Grinders, modern internal; Blount 30", wet (2), Heald 8", mag. ck.
Grinders, St. Louis No. 9; Modern 12"x60".
Grinder, Reed-Prentice vert. surf., 2 chucks, table 12"x90".
Grinder, Pratt & Whitney vert. surf.
Grinder, Landis 16"x66" crankshaft.
Grinders, Besly & Norton d.e. disc.
Hack saws, 4x4, 6x6 & 2 Racine Jrs.
Racine 8x8 h.s., Peerless 6x6" h.s.
Hammers, Bradley 40 lb. helve;
Lathes, Davis 22"x10" q. c. g.; Sidney 16"x6" q. c. g. LeBlond 16"x8" Whitcomb-B. 22"x8" q. c. g. Monarch 16"x8"; C. & J. 15"x8"; Superior 18"x8"; LeBlond 21"x10" q. c. g.; American 18"x8"; L. & S. 24"x12"; all quick change grd.; 40 assorted sizes, quick and loose change gear.
Lathes, Fitchburg 24"x18"; Greaves-Klusman 24"x16"; all standard chg.
Milling machines, Ohio No. 20 plain.
LeBlond No. 3-H plain; Brown &

S. No. 3 plain; B. & S. No. 3-B pl., s. p. d.; American No. 1 1/2 plain; Cincinnati No. 3 plain; Becker No. 25 plain, Kemp No. 3 univ.; Cincinnati No. 1 1/2 univ.; B. & S. No. 2 plain; Becker No. 2 vertical.
Milling and drilling mchs., Knight No. 1 1/2 with power feed.
Pipe machine, Curtis 3", motor dr.; Merrill 4" belt drive; E. C. & B. 16"; Bignall & Keeler 12".
Planers, Gray 28"x28"x6", 1 head; Cincinnati 36"x36"x18" 2 heads; Pond, 36"x36"x12" table, 18" bed, 2 heads; Withcomb 30"x30"x8".
Punches, Reade 15" s. e., 4" in 1".
Punch presses, 4-Consolidated No. 2; Holden No. 58; Bliss No. 62 grd.; Ferracute No. 1 o. b. l., (2) Federal Nos. 1, 2, 3; Bliss No. 19-C, o. b. l. Federal No. 4; Bliss No. 19; L. & J. No. 1; Rockford Nos. 3 and 3.
Screw machine, Cleveland 24" auto.; P. & W. No. 2 1/2 hand; Foster No. 3 hand; Woods No. 2 tilted turret head; National-A. No. 52 auto., 4-spindle, m. d.; Milholland b. g. hand; Foster No. 7 hd. b. g.
Shaper or slotter, vert., P. & W. 6".
Shapers, S. M. 16"; 24" Queen City 24" back geared, American 20" b. g.; G. & E. 16", b. g.; Niles traveling hd.; Milwaukee 16" b. g.; Walcott 20" b. g.; S. & M. 21" and 26" b. g.; American 18" b. g.; Ohio 16", Cincinnati 20", b. g.; Boynton 7".
Shears, 60" thrt. rotary slitting, (2).
Square shears, Niagara 62" power, m. d. 18-ga.; Ohl 8' power.
Steam hammer, Miles-B. 1100 lbs.
Turret lathes, Warner & S. No. 2A.

USED AND REBUILT MACHINERY

FOR SALE BY

Mid-West Machine Tool & Supply Co.,

Davenport, Iowa

Drill, Baush hor. duplex multiple.
Grinder, 10"x36" Norton.
Grinder, 10"x52" Landis, s. p. d.
Grinder, 54" Gardner vert. disc.
Hobbers, Nos. 3, 12-B & C.

Lathe, No. 9 LeBlond multi-cut.
Millers, Nos. 1 & 2 Brown & Sharpe.
Miller, No. 13-B B. & S., production.
Shaper, 24" G. & E.
Radials, 3' Cincinnati Bickford.

Partial list; send us your inquiries.

FOR SALE BY

W. H. Hobbs Supply Co.,

Eau Claire, Wis.

Blue print machine. Wagenhorst with a. c. lamp and control.
Lathe, chucking, Conradson turret, 3x28" heavy type, designed for heavy duty work.
Lathe, Lodge & Shipley 24"x16" engine, five step cone head, 2 1/2" hole in spindle, quick change gears, compound rest and countershaft.
Planer, Belmer 41"x36"x18" widened patent spur gear, two heads on cross rail, two side heads, with countershaft, power feed.

FOR SALE BY

Strafer Machinery Company,

14th and Provost St.,

Jersey City, N. J.

BORING MILLS

60" Niles-Bement-Pond d. c. mtr. 51" N.-B.-P. single pulley drive.
48" Gisholt speed box m. d. 3" bar Fosdick horiz. belt drive.
No. 1 Cleveland horizontal s. p. d.

DRILLS, RADIAL

6' Reed Prentice inclosed head. 5' Reed Prentice speed box m. d.

GRINDERS.

16"x48" Landis crank s. c. No. 60 Heald cylinder, angle plate.
10"x24" Landis self contained. No. 2 Brown & Sharpe universal.
New Reinesler planer type vertical surface 36"x80" mag. chuck 24"x58".

KEYSEATERS.

No. 5 Mitts & Merrill belt drive. No. 4 Mitts & Merrill extra equipt.

LATHES.

90"x27" Putnam t. g. belt drive. 42"x36" Niles t. g. belt drive.
60"x32" Fifield geared head. 26"-48"x27" McCabe double spindle.
40"x22" Prentice, blocks and chucks. 36"x32" Putnam geared head m. d.
42"-70"x16" Fay & Scott slide gap. 42"x14" Bridgeford geared head.

MILLING MACHINES.

P. & W. planer type 24"x24"x9' 2 hd. No. 2 Cincinnati plain, m. d.
No. 3-B heavy B. & S. plain. No. 3 Cincinnati vertical.

PRESSES.

400 ton W. S. hydraulic 73"x20'. S. & P. 40" double crank, plain.
Ferracute geared s. r. g. 103. Stiles inclinable equal 21 Bliss.
Ferracute geared S. G. 52.

PLANERS.

60"x60"x10' Pond 3 heads. 30"x6" Powell, 1-head.
24"x24"x8' Cincinnati speed box. D. & H. openside, 1 head, m. d.

SHAPERS.

24" Smith & Mills b. g. belt drive. 24" American b. g. belt drive.

SHEARS AND ROLLS.

10' Ohl squaring 1/2" capacity. No. 17 Niagara circular rotary.
10' Loy & Nawrath 1/2" capacity. 8' H. & W. rolls, initial type.

MISCELLANEOUS.

Beading machine, Bliss. Gear hobber, No. 5-A Lees-Bradner.
Borer, American woodworking. Generator, 100 k. w., a. c., Diesel.
Boring bars, portable, 4"x8". Hoist, Liggerwood drum, motor dr.
Compressor, Ingersoll-Rand 8"x8". Lathes, Oliver pattern, slide gap.
Chuck, magnetic, 24"x58". Pipe machine, 6" Saunders with dies.
Chuck jaws set for boring mill. Wire straightener, core, to 5/16".

USED AND REBUILT MACHINERY

FOR SALE BY

Randle Machinery Co.,

1733 Powers St., Cincinnati, Ohio

Air compressors, 10x9 Penna.
Air comp., 13x12x14 Worthington st.
Air comp., 13x8x10 Worthington b.d.
Air comp., 7x6 Worthington b. d.
Bending rolls, 7' x 1" Scully.
Bending rolls, 8' x 1" Ryerson.
Bending rolls, 10' x 1" Cleveland.
Bending rolls, 10' x 1" Bertsch m. d.
Bolt cutters, 4" Acme.
Bolt cutters, 1 1/2" & 2" Acme & Landis
Boring mill, 36, 60 and 72" Bullard.
Boring mill, 54" & 96" Niles.
Boring mill, 10' Pond.
Brake, 4' x 10 ga. Robinson box.
Brake, 8' x 10 ga. D. & K. hand.
Brake, 6' x 18 ga. Keene
Brake, 10' x 5/16" Ohl.
Brake, 12' x 1/2" Ohl.
Drill, 2 1/2' & 4' radials.
Gear hobber, Nos. 3 & 12 B-Colman.
Gear hobbors, Nos. 2 & 3 Farwell.
Grinder, No. 14 Gardner.
Grinder, No. 7 Gardner.
Grinder, No. 24-53" Gardner.
Hack saw, 6x6 Racine or Peerless.
Hack saw, 12x12 Racine.
Keyseater, Nos. 1 & 2 Davis.
Lathe, 16" x 8" Bradford q. c.

Lathe, 24" x 14" Schumacher-Boye q. c.
Lathe, 20" x 12" American q. c.
Lathe, 42" x 18" New Haven, s. q. c.
Lathe, 37" x 28" Putnam l. c. m. d.
Lathe, 66" x 28" Fifeid l. c.
Miller, No. 2 Kempsmith.
Miller, Nos. 2 & 3 B. & S.
Miller, No. 3 Cincinnati universal.
Planer, 36" x 36" x 10' Gray, 1 head.
Planer, 55" x 55" x 30' Betts, 2 heads.
Planer, 72" x 72" x 20' Ridgway, 4 hds.
Press, No. 4 Verdin-Kappes-Verdin.
Press, No. 2 Verdin-Kappes-Verdin.
Press, No. 3A Willard.
Press, No. 73 1/2 Bliss.
Pipe machines, all sizes.
Shaper, 16" Queen City b. g.
Shaper, 24" Queen City b. g.
Shaper, 16" Cincinnati b. g.
Shear, No. 1 1/2 D. & K. m. d. alligator
Shear, No. 2 D. & K. alligator m. d.
Shear, 8' x 16 ga. Pexto.
Shear, 8' x 14 ga. Bertsch.
Shear, 8' x 10 ga. Robinson.
Shear, 10' x 14 ga. Bertsch.
Wheel lathe, 42" Putnam, m. d.
Wheel press, 200 ton N.-B.-P.

Also many other tools. Send us your inquiry.

FOR SALE BY

The O'Brien Machinery Co.,

113 N. Third St., Philadelphia, Pa.

Bending roll, 25" H. & J. 1/2 cap.
Brake, Ohl 8" cap., No. 10 gauge.
Drill, 32" Aurora, motor driven.
Drill, 26-spindle Natco, No. 2 taper.
Gear cutter, 36" Becker-B. auto.
Gear cutter, No. 24 Whiton, belt dr.
Grinder, 12" x 30" Cincinnati univ.
Hack saw, 6" x 6" Racine.
Hammer, 2000 lbs. Chambersburg,
double frame, steam forging.
Hammer, 1100 lb. N. B. P., sgl. fr.
Lathe, 15" x 6" Rahn-Larmon, belt, q. c.
Lathe, 18" x 8" American.
Lathe, 19" x 5" Sidney heavy duty,
belt drive, quick change.
Lathe, 26" x 45" x 14" McCabe-2-in-1,
belt.
Lathe, 26" x 20" Lodge & Shipley.
Lathe, 30" x 30" Harrington.
Miller, Newton duplex, planer type,
table 21" x 12".
Miller, No. 3 Becker universal, table
12" x 40".
Miller, No. 4 Brown & Sharpe plain.
Milling mche., No. 3 Garvin duplex.
Planer, 36" x 36" x 12" Cincinnati, 2 hds.
Pipe machines, 2", 4", 6", 8" & 12"
Oster, Cox, Williams, Eaton-Cole
& Burnham and Jarecki makes,
belt or motor driven, comp. stock.

Pipe machines, Oster portable, gas,
drive, all sizes.
Press, No. 73 1/2 Bliss trimming press.
Press, No. 37 Niagara, 1100 lb. fly-
wheel, solid back.
Press, No. 123 Ferracute, geared,
double acting, flywheel 475 lb.
Press, DD3 Ferracute, dbl. acting.
Punch, No. 51 Beloit, belt, capacity
1 1/2" x 1 1/2".
Punch, No. 1 H. & J. 20" thrt. 1 1/2" x 1 1/2".
Punch, No. 1 Royersford double end,
1 1/2" x 1 1/2".
Punch and shear, 30" Hillis &
Jones, cap. 1 1/2" x 1", belt drive.
Punch and shear, 24" Southwark
arch jaw, cap. 1 1/2" x 1", motor drive.
Saw, 30" Espen-Lucas, cap. 8".
Shaper, 18" Cincinnati, one travel-
ing head, 2 tables.
Shear, angle, Type C Long & A.
double, capacity 8x8x1 angles.
Shear, Niles, plate splitting, 1" ca-
pacity, motor driven.
Shear, 8' Covington, squaring, gap
pattern, 1 1/2" capacity.
Slotter, 10" - 12" Dill, belt drive.
Turret lathe, No. 6 Warner & Swasey,
wire feed.

USED AND REBUILT MACHINERY

FOR SALE BY

Rosenfeld Machinery Co., 942-944 W. Lake St., Chicago, Ill.

Broaching machine, No. 2 LaPointe (New London), with broaches.
Grinder, No. 10 Besly disc.
Milling machine, 1B Milwaukee, single pulley drive with vise.
Miller, Becker vertical, Model CS, rotary table.
Motors, $\frac{1}{2}$ h. p. to 100 h. p., a. c. and d. c.
Punch press, 1-4P style, solid back.
Shaper, 24" Ohio, motor drive.
Vises, 100 new Rock Island all sizes.

FOR SALE BY

Syracuse Supply Company, 314 W. Fayette St., Syracuse, N. Y.

Guaranteed new machines at prices below list:

Arbor, No. 54-B; K. & T. \$20.00.	Drill, No. 1 Natco, compound table, arranged for belted motor drive.
Arbor press, Canedy-Otto No. 1 \$30.	Grinder, No. 1 Bath universal.
Readers and crimpers, P. S. & W.	Jointer, 12" Whipp \$300.
Chuck, Simmons magnetic, 31x10 $\frac{1}{2}$ " \$200.00.	Threading mch., No. 74 Forbes \$170.
Drill, No. 9 Natco Minster.	Vise, No. 3 Royersford production.
Exceptional values in used tools:	
Bolt threader, Acme 2-spindle \$125.	Lathe, 18x10 Reed.
Boring machine, 18" Egan vertical.	Lathe, 28x12 Draper.
Drills, Drees 5" radial (2).	Lathe, 24x26 Pratt & Whitney.
Generator, D. & E. Fuse Co. 115 volt, 550 watt.	Miller, Wisconsin hand, \$125.00.
Hammer, F-60 Syntro electric \$40.	Rip saw, No. 24 Powers, self feed.
Lathe, 16x6 Fitchburg.	Screw machine, No. 24 Garvin auto.
Lathe, 16x10 Flather.	Turret lathes, No. 4 Foster, (2).
	Turret lathe, No. 6 Wood tilted tur.

FOR SALE BY

Brandt Machinery Company,

50 Penn Ave., Pittsburgh, Pa.

Bending rolls, 12"x1 $\frac{1}{2}$ " Brennan.	Crane, 20 ton 45' Shaw, d. c.
Bending rolls, 16"x $\frac{1}{2}$ " Niles, d. e.	Crane, 5 ton 50' Morgan, d. c.
Bending roll, 5"x1" Queen City, d. e.	Crane, 3 t. 30' hand, or less, to suit.
Bending roll, 16"x $\frac{1}{2}$ " Bertsch, d. e.	Drill, 21" C-O, m. d. with motor.
Bending roll, 12"x $\frac{1}{2}$ " Niles, initial.	Forging mch. 1 $\frac{1}{2}$ ", 2", 3", 4", 5" Ajax.
Bending roll, 10"x $\frac{1}{2}$ " Cleve, d. e., m. d.	Forging mch. 1", 1 $\frac{1}{2}$ ", 2", 2 $\frac{1}{2}$ " Acme.
Bending roll, 20"x1" Niles, d. e.	Flanging machine, 1" McCabe.
Bending roll, 12"x $\frac{1}{2}$ " H. & J., d. e.	Grinder, 12x36 Modern, univ.
Bending roll, 8"x $\frac{1}{2}$ " Bertsch, m. d., d. e.	Grinder, 3 h. p. a. c., U. S. floor.
Bending roll, 10"x $\frac{1}{2}$ " Wickes, d. e.	Lathes, 21"x8" LeBlond, q. c. g.
Bending roll, 10"x1" Cleve, d. e., m. d.	Lathe, 16"x6" L. & S. c. h., q. c. g., ck.
Bending roll, 10"x1" Cleve, d. e.	Lathe, 17"x10" Sidney, g. h., q. c. g., m. d.
Bending roll, 14"x $\frac{1}{2}$ " H. & J. d. e.	Planer, 30"x30"x8" Flather.
Bending roll, 18"x1 $\frac{1}{2}$ " Union i. w.	Press, No. 59 $\frac{1}{2}$ Toledo, tie rod.
Bending roll, 25"x $\frac{1}{2}$ " H. & J. m. d.	Press, No. 58 Toledo, tie rod.
Bolt cutter, 2 $\frac{1}{2}$ " Acme double spindle	Punch, 24" Cleve. e. f. 1 $\frac{1}{2}$ " thru 1".
Bolt cutter, 1 $\frac{1}{2}$ " dbl.-spindle Acme, Landis heads.	Pipe machine, 8" and 10" Jarecki.
Bolt cutter 2 $\frac{1}{2}$ " Acme, single-spindle.	Pipe mch., 6" Jarecki, m. d., like new.
Boring mill, 60" and 72" Bullard.	Pipe machine, 6" & 8" Landis.
Boring mill, 84" & 86" Niles, 2 hds.	Shaper, 32" Steptoe, cone, A1.
Brake, 12"x $\frac{1}{2}$ " D. & K. all steel No. 227	Shaper, 28" G. & E., cone.
Bulldozers, Nos. 4, 5, 26, 8, 29U, Williams-White.	Shear, 48"x $\frac{1}{2}$ " Cleveland, A-1.
Crane, 10 t 50' Shaw 3-60-220 a. c.	Shear, 96"x $\frac{1}{2}$ " Morgan.
Crane, 10 ton 50' Niles 3-60-220 a. c.	Shear, 2" & 3 $\frac{1}{2}$ " square Cleve. guill.
Crane, 5 t. 39' Bedford, 3-60-220 a. c.	Shear, 1 $\frac{1}{2}$ " sq. H. & J., guill. type.
Crane, 20 ton 25' Whiting, d. c.	Shear, No. 4 H. & J., guill. type 3 $\frac{1}{2}$ " square.

We solicit your inquiries. What have you for sale?

USED AND REBUILT MACHINERY

FOR SALE BY

E. L. Klauber Machinery Co., 320 South Third St., St. Louis, Mo.

Blowers, Sturtevant; Nos. 8, 9 and 10.
Drill, 4-spindle Henry & Wright.
Drill, Demco d. b., hi-speed \$145.
Drill presses, 10" to 34".
Drop press, 200 lbs. power lift.
Grinder, No. 12 Modern plain cyl.
Grinder, twist drill, American.
Grinder, Taylor wet tool.
Lathe, 9x14 Porter-Cable.
Lathe, 13x6 Seldon.
Lathe, 18x6 Rahn-Larmon.
Lathe, 18x8 Rahn-Larmon \$175.
Lathe, 30x14 Bradford; \$475.
Milling machine, No. 4 Cincinnati plain, all geared, single pulley dr.
Milling machine, No. 4 B. & S. pl.
Press, Toledo horning.
Saw, Peerless 6x6 hi-speed.

Saw, Racine 6x6 hi-speed.
Screw machine, Gridley 1 1/2", 4-sp.
Screw machine, No. 0 Brown & Sharpe automatic.
Screw machine, Wood tilted turret, geared friction head, p. f. t.
Screw machine, No. 56 National Acme 4-spindle automatic.
Shaper, 12" Juengst.
Shaper, 12" Hendey \$150.
Shaper, 16" Smith & Mills \$185.
Shaper, 20" Gould & Eberhardt.
Square shear, power, 7 1/2' light \$180.
Tapping machine, No. 4 St. Louis.
Tapping machine, No. 6 St. Louis.
Tapping machine, Rickert-Shafer.
Tapping mche., No. 1 Garvin auto.
Welder, spot; National 25 k. w.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

1211-1223 N. 12th St.,

St. Louis, Mo.

DRILLS.

1-spindle Avey.
2-spindle Allen.
3-spindle Avey.
8-spindle Bausch.
14" Mason high speed.
20" Champion.

22" Barnes back geared.
25" Barnes back geared.
32" Prentice sliding head.
5' arm American radial.
5' arm Niles half universal radial.

LATHES.

14"x10' Lodge & Shipley, q. c. g.
18"x 8' Lodge & Shipley, q. c. g.
24"x10' LeBlond.

24"x12' Boye & Emmes q. c. g.
30"x13' H. S. & G., q. c. g.

BORING MILLS.

Niles horizontal, 4".
34" Gisholt turret vertical.
42" Bullard, 1 turret, 1 plain head.
36" Niles, 2 heads.

60" Morton Poole.
No. 1 P. & H. boring and drilling machine.

SHAPERS AND PLANERS.

12" G. & E. crank shaper.
16" Smith & Mills shaper.

32" Cincinnati shaper.
42"x42"x26' Wheeler planer.

GEAR CUTTERS.

26" Brown & Sharpe.

26" Cincinnati.

MILLERS.

No. 14 Kemp Smith plain.
No. 5-B Brown & Sharpe sgl. pul.
No. 3 Rockford hand.

Hendey Lincoln.
No. 2 LeBlond universal.

SCREW AND TURRET MACHINES.

No. 6-A Potter & Johnston.
No. 2 Warner & Swasey hollow hex.
No. 2 Warner & Swasey screw mche.
Wood turret lathes.

No. 6 Warner & Swasey.
3"x36" Jones & Lamson.
No. 60 Brown & Sharpe automatic.

PIPE AND BOLT THREADING MACHINES.

2" Bignall & Keeler pipe machine.
6" Jarecki pipe machine.
6" Bignall & Keeler pipe machine.

8" Williams pipe machine.
1 1/2" Standard bolt threader.
3" Acme bolt threader.

MISCELLANEOUS.

Bar shear, 5"x 1/2".
Bevel shear, 1/2" Lennox.
Hammer, 60 lb. Bradley helve.
Punch, No. 14 W. W., 12" throat.

Punch, 26" throat, 1/2" in 1/2".
Riveter, 1/2" Shuster.
Saw, No. 17 Higley cold.
Tapper, auto., Rickert & Schafer.

USED AND REBUILT MACHINERY

FOR SALE BY

Surplus Material & Machinery Co.
8735 Kercheval Ave., Detroit, Mich.

BENDING BRAKES.

A brand new 12 ft., 18 gauge Chicago hand bending brake; also good used Robinson No. 17, 8 ft., 10 gauge power brake. Both at special bargain prices.

FOR SALE BY

The Reeve-Fritts Co., 558-560 W. Washington Blvd., Chicago, Ill.

Cold saw, No. 4 Nutter & Barnes.
Die filer, No. 3 Barry.
Drill, 14" Leland h. s., tapping att.
Drill, 4-spindle Fox, $\frac{3}{4}$ " cap.
Drill, 6-spindle Henry & W. h. s.
Grinder, disc, 20" Ransom.
Lathe, No. 3 Cataract with turret.
Lathe, No. 4 Cataract (bench).
Lathe, 9x20" Porter-Cable prod.

Lathe, 12"x5' Pratt & Whitney.
Lathe, 14"x8' Hendey q. c. g.
Lathe, 14"x8' Champion q. c. g.
Milling mche., No. 1 Garvin univ.
Pipe machine, No. 64 Merrill.
Planer, 24"x24"x6" American.
Shaper, 16" Steptoe b. g.
Shaper, 20" Ohio h. d., b. g.
Shear, No. 14 Pettingell rotary.

FOR SALE BY

Norton-Broadway Mchy. Co., Sixth & Baymiller Sts., Cincinnati, O.

LATHES.

56"x18' Pittsburgh triple geared.
30"x16' Niles-Bement-Pond, l. c.
30"x14' Prentice q. c.
27"x14' Pond, q. c.
21"x12' LeBlond, q. c.

19"x10' LeBlond q. c.
20"x8' Whitcomb-Blaisdell, grd. hd.
18"x8' Cincinnati, q. c.
18"x8' Mueller q. c.
17"x8' LeBlond, q. c., taper.

MILLING MACHINES.

No. 3 LeBlond plain.
No. 3 Cincinnati, single pulley.
No. 4 Brown & Sharpe sgl. pulley.
No. 4 Cincinnati universal.
Bickett No. 1 vertical.

No. 2 Cincinnati universal.
No. 4 Cincinnati vertical.
No. 2 Cincinnati vertical.
Owen two-spindle.

BORING MILLS.

24" Bullard rapid prod. New Era hd.
34" Bullard New Era.
36" Niles, 2 heads.
42" Niles-Bement-Pond, 2 heads.

10-16' Niles, 2 heads.
Rudolph & Krummel horizontal.
Niles horizontal.
51" Niles, 2 heads.

PLANERS.

24"x24"x8' Ohio.
24"x 8' Pond, 2 heads.
24"x 8' Putnam.
30"x 16' Gray, 2 heads.

48"x16' Detrick & Harvey open side.
48"x10' Belmer, 4 heads.
30"x6' Gray.
26"x8' American.

DRILLS AND RADIALS

2 and 3-spindle Henry & Wright.
4 and 2-spindle Sipp.
1 and 2-spindle Kokomo hi-speed.
No. 310 Baker heavy duty.
Foote-Burt heavy duty.
6" and 5" Americans, single pulley.

5' American, triple purpose.
4' Mueller, single pulley.
4' Morris, with motor.
4' Roos & Mill, single pulley.
20" to 35" uprights.

MISCELLANEOUS.

Bulldozer, Williams-White.
Compressor, 13/8/10 Worthington.
Gear hobber, Farwell No. 2.
Gear hobber, Farwell No. 3.
Grinders, Norton & Modern cyl.
Grinders, disc No. 120 Gardner.
Grinder, Bryant internal.
Grinders, planer type Brown & S.
and Springfield.

Press, 20 ton Lourie hydraulic.
Punch and shear No. 3 H. & J. d. e.
Rolls, 7' long, 4" capacity.
Slotter, 20" Dill.
Turret lathe, 21" Gisholt, motor.
Turret lathe, No. 4 Warner & S.
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Kinds of Machine Tools— Your Requirements

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- 6-20-22"x8' American.
- 1-20x16' Monarch.
- 2-20"x 8' Cisco.
- 11-19"x8' LeBlond.
- 2-18"x12' Reed-Prentice, Gd. Hd.
- 1-16"x12' Monarch.
- 1-16"x 8' Hendey.
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- 1-14"x12' LeBlond Geared Head.
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- 2-No. 6 Brown & Sharpe.
- 2-No. 2-A Warner & Swasey.
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- 2-16" Cincinnati-Acme-Fox.
- 1-14" Warner & Swasey.

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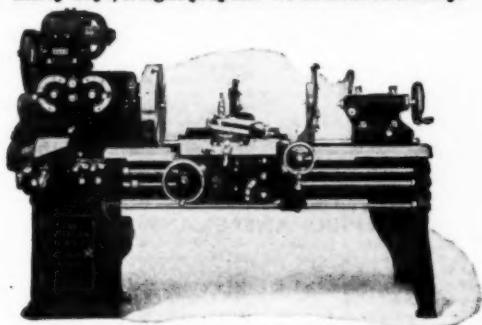
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 20" Milwaukee heavy duty, b. g., crank.
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 24" Cincinnati crank planer, 1 head.
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 18"x8' & 18"x10' Am H. D., g.h., q.c.
 18"x10' and 18"x8' Boye & E. q. c.
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 No. 4 Warner & Swasey Univ. Turret.
 No. 4-G Millholland Grd. Head Turret.
 13, 21 & 24" Gisholt Turret Lathes, late.
 18" Libby Type A Turret, 3 1/2" spindle.
 Nos. 2, 4, & 6 Warner & Swasey Turret.
 Nos. 4 & 7 Bardons & Oliver Turret.

GEAR MACHINERY AND GRINDERS

Nos. 2, 3 & 12 Barber - C. Gear Hob.
 No. 18-H Gould & E., Gear Hobber.
 No. 5-A Lees-Bradner Gear Hobbers.
 12" Ingle Gear Tooth Rounder.
 Nos. 6, 61 & 615 Fellows Gear Shapers.
 No. 4-48" & No. 3-26" B. & S. Gear Cut.
 6" & 11" Gleason Bevel Gr. Generators.
 84" Diamond Face Grinder, arr. m. dr.
 No. 11 B. & S. Plain, self-contained late.
 No. 4 Brown & Sharpe Universal.
 6x32", 10x36", 10x50", 10x72" Nort. pl.
 16"x48" Landis Pl. Self-Con. Crkshaft.
 6x18", 10x36", 10x52", 16x48" Landis
 Plain Self-Contained, late types.

14"x60" Queen City Plain, self-cont.
 No. 70 Heald Int., late type clutch in hd.
 Nos. 70 and 75 Heald Internal.
 Nos. 60 & 65 Heald Cylinder.
 No. 16-26" Blanchard Vert. Surf., b. d.
 12" P. & W. Vert. Surf., rot. mag. chk.
 14" Pratt & Whitney Vertical Surface.
 Walker s. s. Vert. Surf., 10" dia. mag. ck.
 No. 1 LeBlond Univ. Tool & Cutter.
 No. 1 1/2 Cincinnati Univ. Tool & Cutter
 No. 4 23" and No. 8 40" Gardner Disc.
 No. 29-53" Bealy Horiz. Disc, m. d.
 No. 2 Cincinnati 12"x36" Plain,
 60" Bridgeport Face.

MISCELLANEOUS

Arbor Press, Nos. 3, 3 1/2, 4, 5, Greenerd.
 Arbor Presses, Nos. 4, 5, 6 Atlas.
 Automatics, Nos. 5-A & 6-A P. & J.
 Boring Mill, No. 1 Cleve. 2" dia. bar.
 Bor. Mill, 42", 36" & 24" Bullard Vert.
 Boring Mill, 24" Bullard Rapid Prod.
 Bor. Mill, 42" Bausch Vert., 2 hds., p.r.t.
 Broaches, Nos. 2 and 3 J. N. LaPointe,
 single and double types.
 Die Sinks, Nos. 2 and 3 Pratt & W.
 Hack Saw, 6x6" Racine and Peerless.
 Hammers, No. 1 1/2 B, 2A, 2A H. D.,
 3A, 3A H. D. High Speed Riveting.

Millers, 2" and 4" Pratt & W. Spline.
 Press, 15 ton Lucas Forcing.
 Presses, No. 19, 20, and 21 Bliss.
 Press, No. 76 Toledo Open Bk. Power.
 Press, P. G. No. 6 Ferracute Grd. Pwr.
 Presses, Nos. 1, 3, Cons. O. B. I. Pwr.
 Press, No. 33 Toledo Upright.
 Press, No. 91-D Toledo Double Crank.
 Punch & Shear, No. 3 H. & J. d. end.
 Slotter, 15" Niles-Bement-Pond.
 Tappers, Nos. 2 and 2X Garvin Auto.
 Thread Millers, 6"x14", 6"x80" P. & W.
 Welder, Federal Spot, cap. 2 pcs. 1/16".

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- No. 2 Cincinnati-Acme Universal Turret Lathe.
- No. 6 Warner & Swasey Turret Lathe, arranged for bar work.
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- 12"x18" Cincinnati Plain Grinder.
- 10"x36" Norton Plain Grinder.
- No. 4 16"x72" Cincinnati Universal Grinder.
- No. 16 Blanchard Motor in Head Grinder.
- No. 1 Baker Keyseater.
- No. 2 Baker Keyseater.
- 4' Cincinnati Plain Radial.
- 4-Spindle Leland-Gifford Ball Bearing Sensitive Drill.
- No. 2 Colburn Mfg. Type Drill Press, 2-spindle.
- 6' Cincinnati Bickford Full Universal Radial.
- 18" Cincinnati Plain & Duplex Automatic Millers, s. p. d.
- 60" King Vertical Boring Mill.
- No. 0 Giddings & Lewis Horizontal Boring Mill.
- No. 21 Bliss Press, Inclined.
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10' Niles Vertical Boring Mill, Heavy Type, Motor Drive.
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61" Bullard Vertical Boring Mill, Belt Drive, Heavy Type.
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No. 12 Minster, High Duty, Vertical Drill Press.
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No. 2 Garvin Universal Milling Machine Complete.
No. 4 Cincinnati Plain Milling Machine Complete.
No. 3 Brown & Sharpe Plain Milling Machine Complete.
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- 1-18"x 8' LeBlond.
- 1-18"x 8' Lodge-Shiple.
- 1-18"x12' Lodge-Shiple.
- 1-20"x12' LeBlond.
- 1-20-42"x6' Fay-Scott Gap.
- 1-24"x10' LeBlond.
- 2-24"x16' Reed.
- 1-25"x10' LeBlond.
- 1-25-41"x18' Harrington Gap.
- 2-26"x12' Niles-Bement-Pond.
- 1-28"x18' Schumacher-Boye.
- 4-30"x12' American Geared Head.
- 1-30"x20' American Geared Head.
- 1-36"x14' Bridgeford, Motor Dr.
- 1-42" N-B-P Double End Wheel.
- 1-42"x24" N.-B.-P., Motor Drive.
- 1-42"x30' Putnam Motor Drive.
- 1-48"x14' Pond, Motor Drive.
- 1-50"x34' Pittsburgh.
- 1-50"x36' Pittsburgh.

SHAPERS AND SLOTTERS

- 1-6" Pratt & Whitney.
- 1-16" Stockbridge.
- 1-16" Milwaukee.
- 1-20" American.
- 1-20" Kelley.
- 1-20" Steptoe.
- 1-24" Hendey Shaper.
- 1-24" Stockbridge Motor Drive.
- 1-24" Steptoe Shaper.
- 1-18" Newton.
- 1-15-18" Dill Slotter.
- 1-18" Dill.

- 1-20" Bement.
- 1-22" Bement-Miles.

BORING MILLS

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- 1-No. 3 Univ. Horiz. Precision.
- 1-No. 0 Bement Horizontal.
- 1-No. 0 D-Harvey 3 1/2" bar.
- 1-60" N-B-Pond Horiz. Duplex.
- 1-No. 3 Betts Horizontal.
- 1-44" Bar N-B-Pond Floor Type.
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- 1-Espen Lucas 6" bar Horizontal.
- 1-Newton 7" bar Horizontal.
- 3-24" Bullard Rapid Prod. Vert.
- 1-34" Bullard Vertical.
- 1-34" Colburn Vertical.
- 1-42" Bullard Rapid Traverse.
- 1-42" Gisholt Rapid Traverse.
- 1-44" Putnam Rapid Traverse.
- 2-44" N B-Pond Rapid Traverse.
- 1-54" Gisholt Rapid Traverse.
- 1-60" Colburn Rapid Traverse.
- 1-62" N-B-Pond Rapid Traverse.
- 1-72" Niles Vertical.
- 1-96" N-B-Pond Motor Drive.
- 1-96" Betts Vertical.
- 1-100" Sellers Rapid Traverse.
- 1-10-16" Niles Rapid Traverse.
- 1-10" Niles Vertical.
- 1-12" Niles Rapid Traverse.
- 1-14" Niles Rapid Traverse.

TURRET LATHES & SCREW MCHS.

- 1-14x9 Acme.
- 1-14x18 Pratt & Whitney.
- 1-2x26 Jones & Lamson Turret.
- 7-2x26 Pratt & Whitney.
- 2-24x26 Acme Flat Turret.
- 3-3x36 Pratt & Whitney.
- 1-44x20 Bardons Oliver.
- 3-18" Libby Turret.
- 2-No. 2-A Warner & S. Turret.
- 1-No. 3-A Warner & S. Turret.
- 1-No. 6 Wood Tilted Turret.
- 4-No. 4 Warner & Swasey Univ.
- 8-No. 4 Warner & Swasey Turret.
- 1-No. 4 Bardons & Oliver Turret.
- 2-No. 6 Warner & Swasey Turret.

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17" Smith & Mills spiral bull gr. 300.	16"x16"x50" Lee Tool Room
16" Gould & E. Crank b. g. 625.	Planer, p. f. to rail & head..... 300.
16" Hamilton Crank, b. g. 450.	10"x12"x24" Hendey Bench... 200.

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10"x72" Landis pl. self-cont. 1250.	6"x18" Landis Plain, s.-con. 525.
10"x72" Brown & Sharpe Pl. 850.	P. & W. Vert. Sur. tbl. 12"x40" 875.
6"x32" Norton Plain (2), each. 350.	24" Ransom 5 h. p., m. d. Snag. 150.
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No. 4 Foster, hand screw, fr. hd. 325.	24" & 30" Model A Cleve. Auto.
24" Acme Turret complete eq. 325.	No. 6A P. & J. Chucking Mchs.
J. & L. Turret, Barker Chuck. 300.	serial over 18,000 (2) ea..... 650.

MILLING MACHINES

No. 4 LeBlond Pl., all hrd. fds. \$ 850.	No. 12 B. & S. Prod., (2) ea. \$ 250.
No. 3 LeBlond Plain, arr. m. d. 675.	No. 6 Becker Vertical, sl. hd. 1200.
No. 3 LeBlond Pl., all grd. fds. 525.	No. 5 Becker Vert., sl. hd. 750.
No. 24 LeBlond Univ., all grd. 650.	No. 4 Garvin Profi. mtr. dr. (5) 300.
No. 14 American Plain all grd. 375.	30"x30"x12" Ingersoll Hor. Sp. 800.
No. 1 Kearney & T. pl. s. p. d. 525.	

MISCELLANEOUS

Robbins 2" Pipe Mche., m. d. \$ 200.	1" Acme Stud Threader..... \$ 400.
Curtiss 1" to 6" Pipe Machine. 250.	No. 1 Baker Keyseater 14" cap. 275.
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No. 6 B. & S. Gear Cutter 60" 1350.	No. 1 Farwell Gear Cutter..... 180.
No. 6 Fellows Gear Shaper..... 250.	1" Garvin Hor. Tapper..... 125.
Shuster Riveter & Spinner... 100.	No. 6 Amer. Pressure Blower.. 150.
No. 10P Marshall's Thr Shear 200.	Dwight Slate Marking (2) ea. 75.
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- 1—Gardner Disc.
- 1—Brown & Sharpe No. 2 Surface.
- 2—Rivett No. 205 Radial.
- 1—Rivett Univ. No. 6 Internal.
- 2—Landis No. 3 Universal.
- 3—Bryant Chuck. Nos. 6 & 15A.
- 1—Bealy No. 17 double end.

Lathes—Engine—Miscellaneous

- 1—Carroll & J. 14x8, Q. C.
- 1—Hamilton, 16x6, B. G., Q. C.
- 5—Lodge & Shipley 16x6, 18x8, 20x10, 22x10, B. G., Q. C.
- 1—Sidney 20x10, B. G., Q. C.
- 2—LeBlond 17x12, 21x12, B. G.
- 5—Greaves & Kluman 18x6, 18x8, 30x8, B. G., Q. C.
- 2—Chard 16x6&24x11 B. G., Q. C.
- 1—L. & S. Duplex 12x24" Cr. Pin.
- 4—American 14x6, 16x6, 18x8.
- 1—G. & L. 18x8 B. G., Q. C.
- 1—14"x8" Carroll & Jamieson.
- 1—Sidney 14x6" B. G., Q. C., T. A.
- 1—Bradford 16" B. G., Q. C., T. A.
- 1—Monarch 16x6 B. G. Q. C.

Lathes—Turret and Screw Mchs.

- 2—Foster No. 1-B—20" swing.
- 2—Gisholt No. 2, D. M. D.
- 2—Gisholt No. H21.
- 1—Warner & Swasey No. 6.
- 2—Millholland 1" & 1½" D. M. D.
- 2—Pratt & Whitney 20".
- 1—B. & O. No. 4.

Milling Machines—Vertical

- 1—Becker No. 5.

Milling Machines—Horizontal

- 1—Milwaukee No. 3B, d. o., v. h.
- 3—No. 2 Cincinnati Universal.
- 1—Brown & Sharpe No. 3.
- 1—LeBlond No. 4 Plain.
- 1—Hendey No. 2 Universal.
- 1—Brown & S. No. 12.
- 1—Steptoe Hand with Vert. Att.
- 6—Whitney No. 6 Hand.
- 1—Garvin No. 14.
- 5—Standard Hand.

Milling Machines—Slab

- 1—Ingersoll 30x30x10', 3 heads.

Presses—Punch

- 2—No. 14 Williams-White.
- 1—McDonald No. 4 O. B. I.
- 2—Consolidated No. 4 O. B. I.
- 1—Marshalltown No. 3 O. B. I.
- 1—Bliss No. 2 O. B. I.

Saws

- 1—Peerless 6x6.
- 1—Egan 36" Band.
- 1—Robertson 4x4 Hack.

Screw Machines—Automatic

- 1—New Britain No. 24 Mult. spdl.
- 4—Gridley ¾" 4-spindle.
- 1—Cleveland 2" S.
- 6—National Acme Nos. 51, 53 and 55 Multiple spindle.

Shapers

- 1—Pratt & Whitney 14" Crank.
- 1—Whipp 16" Crank.
- 1—Steptoe 24".

Miscellaneous

- Bolt Threader, Acme.
- Boring Mill, Bullard 42" Vertical.
- Broach, LaPointe No. 3 M. D.
- Coiling & Cutting, Baird No. 2.
- Generator Sets, (3).
- Motor, 190 H. P. Synchronous.
- Welders, Toledo Spot; Federal Spot; Type B Arc.

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- 1-Bullard 24" N. E.
- 1-King 34" vertical.
- 1-Gisholt 60", 2 heads.
- 1-Cincinnati 8' vertical.
- 1-N-B-P 10-16' vertical, 2 heads.
- 1-Niles 14' vertical.
- 1-Niles 16-24' extension vertical.
- 1-Detrick & H. 34" bar, floor type.
- 1-Barrett No. 2 horiz. 5" bar.
- 1-Landis No. 35 horizontal.
- 1-Rockford No. 2 horizontal.

DRILLS—Multiple Spindle

- 4-Baush Nos. 1 & 2, rd. & sq. hd.
- 2-Fox D-31.
- 1-Moline No. 5-D cylinder borer.
- 6-Natco Nos. 12, 13, 14, 37.

DRILLS—Upright

- 2-Barnes 20" and 24" camel.
- 1-Colburn D-4.
- 1-Leland & Gifford 2 spindle.
- 2-Avey 1 and 3-spindle.
- 1-Sibley 30"
- 1-P. & W. No. 1 deep hole.
- 6-Henry & Wright 1, 2 & 4-spd.
- 1-Baker No. 310.

DRILLS—Radial

- 1-Baush 6' plain.
- 1-American 8' pl., triple purpose.
- 1-N-B-P. 96" plain.

GEAR CUTTERS

- 7-B. & S. 3x26, 3x36, 4x36.
- 3-B. & S. No. 6, 50" cap.
- 1-Brown & Sharpe No. 13.
- 6-Cincinnati 16" Hobbers.
- 6-Barber-Colman No. 12.
- 1-Gould & Eberhardt No. 18-H.
- 3-Fellows Gear Grinders.
- 8-Fellows Nos. 6, 61, 65, 615.
- 4-Fellows No. 7 high speed.
- 3-Gleason 6", 11", 18".

GRINDERS

- 9-Landis 6x18, 10x24, 10x36, 12x36, 12x96 plain.
- 6-Norton 3x18, 6x32, 10x24, 10x36, 10x50, 16x36.
- 1-Norton-BA 10x18.
- 1-Norton 16x50 crank.
- 2-Landis 10x52 cam.
- 1-Blanchard No. 16 surface.
- 1-Diamond No. 2 surface.
- 1-Brown & Sharpe No. 2 surface.
- 1-Heald No. 22-8".
- 12-Heald Nos. 65, 70, 75, 80.
- 1-Bath Spline.
- 1-P. & W. 22x7 Surface.
- 1-Gardner No. 24 horizontal.
- 1-P. & W. No. 14 surface.

- 1-Pearson-Arter 8" rotary surface.
- 1-B. & S. No. 3 universal.

HAMMERS

- 1-New Bradley 30 lb. helve.
- 1-Chambersburg 400 lb. bd. drop.
- 1-B. & S. 800 lb. drop.
- 1-Toledo 1500 lb. bd. drop.

MILLING MACHINES

- 1-Brown & Sharpe No. 37 duplex.
- 6-B. & S. Nos. 2, 2 B plain.
- 8-Cincinnati Nos. 14, 2, 3 & 4 pl.
- 1-B. & S. No. 14 universal.
- 1-Kempsmith No. 3 universal.
- 1-LeBlond No. 3 universal.
- 8-Briggs Type "A" mfg.
- 1-Kempsmith No. 33 mfg.
- 1-Briggs Type "B", 72" table.
- 1-Ingersoll 24"x24"x10'.
- 4-Becker Nos. AB, 6, CS, vert.
- 6-P. & W. 6x14, 6x48, 6x80 th.
- 2-P. & W. 5", 12" auto.

LATHES

- 2-Hendey 16"x6", 16"x7" grd. hd.
 - 2-Sebastian 18"x6'.
 - 2-Springfield 18"x16'.
 - 1-LeBlond 23"x10'; s. p. d.
 - 1-Reed Prentice 24"x12'.
 - 1-Boye & Emmes 24"x12'.
 - 3-LeBlond 26"x10' duplex crank.
 - 1-Reed Prentice 27"x12' s. p. d.
 - 1-F. F. Reed 32"x27'.
 - 1-Niles 28"x24'.
 - 1-Niles-Bement-Pond 42"x24'.
 - 1-McCabe 48" double spindle.
 - 7-LeBlond No. 12 multicuts.
- Lathes of all sizes and types.

SCREW MACHINES—Automatic

- 12-Cleveland 8", 10", 12", 14", 16", 18", 20", 22", 24", 26", 28", 30", 32", 34", 36", 38", 40", 42", 44", 46", 48", 50", 52", 54", 56", 58", 60", 62", 64", 66", 68", 70", 72", 74", 76", 78", 80", 82", 84", 86", 88", 90", 92", 94", 96", 98", 100", 102", 104", 106", 108", 110", 112", 114", 116", 118", 120", 122", 124", 126", 128", 130", 132", 134", 136", 138", 140", 142", 144", 146", 148", 150", 152", 154", 156", 158", 160", 162", 164", 166", 168", 170", 172", 174", 176", 178", 180", 182", 184", 186", 188", 190", 192", 194", 196", 198", 200", 202", 204", 206", 208", 210", 212", 214", 216", 218", 220", 222", 224", 226", 228", 230", 232", 234", 236", 238", 240", 242", 244", 246", 248", 250", 252", 254", 256", 258", 260", 262", 264", 266", 268", 270", 272", 274", 276", 278", 280", 282", 284", 286", 288", 290", 292", 294", 296", 298", 300", 302", 304", 306", 308", 310", 312", 314", 316", 318", 320", 322", 324", 326", 328", 330", 332", 334", 336", 338", 340", 342", 344", 346", 348", 350", 352", 354", 356", 358", 360", 362", 364", 366", 368", 370", 372", 374", 376", 378", 380", 382", 384", 386", 388", 390", 392", 394", 396", 398", 400", 402", 404", 406", 408", 410", 412", 414", 416", 418", 420", 422", 424", 426", 428", 430", 432", 434", 436", 438", 440", 442", 444", 446", 448", 450", 452", 454", 456", 458", 460", 462", 464", 466", 468", 470", 472", 474", 476", 478", 480", 482", 484", 486", 488", 490", 492", 494", 496", 498", 500", 502", 504", 506", 508", 510", 512", 514", 516", 518", 520", 522", 524", 526", 528", 530", 532", 534", 536", 538", 540", 542", 544", 546", 548", 550", 552", 554", 556", 558", 560", 562", 564", 566", 568", 570", 572", 574", 576", 578", 580", 582", 584", 586", 588", 590", 592", 594", 596", 598", 600", 602", 604", 606", 608", 610", 612", 614", 616", 618", 620", 622", 624", 626", 628", 630", 632", 634", 636", 638", 640", 642", 644", 646", 648", 650", 652", 654", 656", 658", 660", 662", 664", 666", 668", 670", 672", 674", 676", 678", 680", 682", 684", 686", 688", 690", 692", 694", 696", 698", 700", 702", 704", 706", 708", 710", 712", 714", 716", 718", 720", 722", 724", 726", 728", 730", 732", 734", 736", 738", 740", 742", 744", 746", 748", 750", 752", 754", 756", 758", 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000.

TURRET AND SCREW MCHS.

- 1-Acme Fox Monitor.
- 4-Foster Nos. 2, 4, 5, 6.
- 2-Acme 34x36.
- 10-J. & L. 24x24, 3x36.
- 2-Steinle 24" Turret.
- 1-W. & S. 2-A universal Turret.
- 2-J. & L. 2-spindle.

PLANERS

- 1-Detrick & H. 30"x10', 1 hd., o. s.
- 1-Detrick & H. 96x48x20' open s.
- 1-Gray 38"x38"x20', 3 heads.
- 1-Cincinnati 48"x48"x16', 4 hds.
- 1-Gray 48"x48"x12', 2 heads.

This represents but a portion of our stock. Send us your inquiries—we have just made an attractive purchase.

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Bath-Cleveland

BORING MILLS

5" bar Niles horiz.
4" bar Bement table type, hor., m.d.
51" Niles-Bement-Pond, s. p. d.
60" Gisholt, arranged motor drive.

10-16' Niles & Bement-Miles ext.
16-24' Niles extension type.
14' Niles.
96" Betts vertical, geared feed.

DRILLS

6' American triple purpose.
22" Barnes, sliding head.
24" Silver, sliding head.

24" Superior, sliding head.
4-spindle Foote-Burt.
6-spindle Moline cylinder borer.

FORGING, BOLT AND NUT MACHINERY

1", 1" 2" 3" Acme and Ajax upsetters.
1" & 1" Waterbury-Farrel D.S.O.D. cold headers.
1" x 3" Manville & 1" x 4" Waterbury-Farrel S. S. D. cold headers.
1", 1" and 1" National bent nut tappers.

1" W.-F. cold pressed nut machines.
1" Rickert-Shafer tapper.
Nos. 1 & 6 Williams-W. bulldozers.
1" Shuster wire straightener.
14" Landis 3 head bolt cutter, motor drive.
5/16" four-slide wire formers.

GRINDERS AND GEAR CUTTERS

10"x24": 10"x52" Landis self-cont.
10"x22" Greenfield cutter grinder.

72" G. & E. gear cutter, arr. m. d.

LATHES AND TURRET LATHES

16"x 8' Monarch, quick change.
17"x 8' Sidney, quick change.
3"x36" Jones & Lamson, grd. hds.

18" Libby geared heads.
24" Gisholts, belt drive.

MILLING MACHINES AND KEYSEATERS

Type B Briggs, Lincoln 54x11 1/4" tbls.
20"x7"x18" Oesterlein plain.
No. 0 Rockford, 30"x7 1/2" table.
No. 1 Kempsmith 22"x8"x19" plain.
No. 3 Brown & Sharpe, vertical.

No. 6 Becker vertical.
Model B Becker vertical.
38"x10' Newton duplex miller.
No. 2 Baker Bros. keyseater, automatic feed.

PLANERS AND SHAPERS

42"x48"x16' D. & H. o. s., rev. m.d.
60"x96"x20' D. & H. o. s., extra hous.
48"x72"x22' D. & H. o. s., extra hous.
48"x48"x16' Cincinnati, 4 heads.

72"x72"x20' Ridgway, 4 heads.
96"x96"x16' Pond, 4 heads, belt dr.
96"x96"x18' Ridgway, motor drive.
36" Morton draw cut shaper.

MISCELLANEOUS

Blowers, No. 1 Buffalo Forge.
Brake, 10"x5/16" Ohl bend arr. m.d.
Cold Saw, No. 4B Cochrane-Bly, motor drive.
Pipe Machine, 4" Oster.
Press, Arbor, No. 3 1/2 Greenerd.

Press, No. 5 Consolidated inclinable.
Riveter, 30 ton Hanna, 6' gap.
Rolls, Reclaiming, Ajax, with Rockwell furnace.
Slotters, 20" and 36" Bement crank.
Slotter, 48" Niles-Bement-P. grd.

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Cleveland, Ohio

Cable Address: BATHCO—Cleveland

P-E-CO Rebuilt Tools

- 1—No. 14 Natco multiple spindle Drill, round head, 18 spindles, belt drive.
- 1—No. 1 Baush multiple spindle Drill, rectangular head, 10 spindles.
- 1—No. 2 Baush multiple spindle Drill, rectangular head, arranged for 16 spindles equipped with 13 spindles, rectangular head.
- 1—Harrington multiple spindle Drill.
- 3—2½ ft. Carlton Sensitive Radial Drills.
- 1—3 ft. Fosdick Radial Drill.
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- 1—No. 24 New Britain Chucking Machine.
- 1—No. 44 New Britain Chucking Machine.
- 5—Porter-Cable Lathes.
- 2—Sundstrand Lathes.
- 1—No. 1 LeBlond Tool Grinder.
- 1—4-spindle Rockford Drill
- 1—3-spindle Rockford Drill.
- 1—12x6 Seneca Falls Lathe.
- 1—10x24 Norton Grinder.
- 1—10x36 Norton Grinder.
- 2—2M Potter & Johnson Automatic Mills.
- 1—40" Ohio Tilted Table Mill.
- 2—General Flexible Presses.
- 1—Fox Superflex Press.
- 2—No. 772 Frasier-Arter Automatic Grinders.
- 2—Norton Crankshaft Balancers.

Also General Assortment of lathes, milling machines and other standard equipment.

⌈ All of the above machines are rebuilt and carry our guarantee that if not satisfactory for any reason whatsoever they may be returned to us within thirty days, freight prepaid, and the purchase price will be refunded. ⌋

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We have a desirable lot of NEW and USED tools, some thoroughly rebuilt and in fine condition, others "As is" but in running order, all of which we wish to move quickly at interesting prices. Write or see us regarding this stock, which is on display in our Cincinnati warehouse. This lot is as follows:

NEW TOOLS

- No. 2 Edlund Double Column Upright Drill.
- No. 2 Wood Tilted Turret Lathe, friction geared head.

USED TOOLS

LATHES

- 16"x8" Hamilton, Single Back Gear.
- 18" Gisholt Turret, Cone Drive.
- 2 1/4"x24" Jones & Lamson Flat Turret, Geared Head

FLANERS

- *42"x36"x26" "American" 4 Heads.
- *48"x48"x26" "American," 4 Heads.
- 72"x60"x31" Pond, 2 Heads.

DRILLS-RADIAL

- *3" "American" Sensitive.
- *4" 4" "American" Sensitive.
- 4" Bickford, Cone Drive.
- *5" Niles-Bement-Pond, round column, semi-universal, S. P. D.
- 5 1/2" Pond, Cone Drive.
- 6" Prentice, Cone Drive.
- *7" Bickford, Triple Geared, Single Pulley Drive.

SCREW MACHINES

- 2 1/8" Gridley Single Spindle Automatic, motor driven.

MILLING MACHINE

- No. 40 Becker-Brainerd Duplex.

GRINDERS

- No. 10 Bryant Semi-Automatic Hole Grinder.
- No. 22 Brown & Sharpe Internal Grinder.

GEAR CUTTERS

- No. 3 Brown & Sharpe Automatic (for gears up to 26"x8") (3).

SLOTTER

- 48" Bement Heavy, motor driven (almost new).

MISCELLANEOUS

- No. 3-B, J. N. LaPointe Broaching Machine.
- (*) Can be motor driven.

The American Tool Works Company

Cincinnati, Ohio, U. S. A.

Builders of Highly Productive Lathes, Radials, Shapers

Guaranteed Machine Tools

AUTOMATIC SCREW MCHS.

- 1-3/8" Cleveland Automatic
- 1-7/8" 4 Spindle Gridley...\$ 850.
- 1-No. 2 Brown & Sharpe... 450.
- 1-No. 33 New Britain..... 1450.
- 1-No. 53 National-Acme... 600.
- 2-2 1/4" Gridley 4-spindle... 1100.
- 2-3 1/4" single spdl. Gridley 600.
- 1-No. 6A Potter & Johnston 650.
- 1-No. 7A Potter & Johnston 750.

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- 1-Bement-Miles, 5 1/2" bar...\$3750.
- 1-24" Bullard side-head... 1750.
- 1-42" Bullard, 2 heads..... 775.

DRILLS

- 1-24" Prentiss, sliding hd...\$ 150.
- 1-4 Spindle Taylor & Fenn 200.
- 1-3" Dreeses Radial, S. P. D. 1250.
- 1-5" Niles-B.-P. Univ..... 750.
- 1-5" Prentiss Radial..... 750.
- 1-6" Prentiss Radial..... 750.
- 1-6" Baush Radial..... 500.

GRINDERS

- 1-10"x36" Norton.....\$ 550.
- 1-10"x36" Landis..... 650.
- 1-No. 2, B. & S. Surface mag. chuck 400.
- 1-No. 12 Brown & S. Plain 750.
- 2-No. 2 Norton Univ. Tool 250.
- 1-10"x18" Norton.
- 2-10"x24" Norton, NEW.
- 1-No. 4 Brown & S. Univ.
- 1-No. 16 Brown & S. Plain.
- 2-No. 60 Heald
- 1-Rivett Radius..... 450.
- 1-No. 14 Gardner..... 550.

LATHES

- 1-14"x6" Hendeytaper...\$ 775.
- 4-16"x6" Porter..... 150.
- 1-16"x6" Reed, grd. hd. mtr. 425.
- 1-18"x6" Lodge & Shipley, Geared Head.
- 1-18"x14" Monarch..... 450.

- 1-20"x15" Roulsted..... 450.
- 1-21"x14" South Bend..... 550.
- 1-22"x26" L. & S., Q. C. G.
- 1-24"-42"x26" McCabe, 2-in-1..... 550.

MILLING MACHINES

- 1-No. 1 1/2 Cincinnati Pl...\$ 500.
- 1-No. 2 Cincinnati Plain... 675.
- 1-No. 3 Brown & S. Vert.
- 1-No. 3 Becker Vertical.
- 1-No. 3 Hendey Univ..... 1100.
- 1-Newton Slab Miller (Planer Type)

PLANERS

- 1-24"x24"x8 Cincinnati...\$ 550.
- 1-36"x8" Pond, Motor Dr. 550.
- 1-36"x36"x16" Woodward, 4 heads
- 1-36"x36"x18" Cincinnati 1500.
- 1-60"x60"x16" N.-B.-P. 2 h.
- 1-84"x56"x16" Gray..... 2000.

PRESSES-POWER

- 1-150 lb. Bradley Helve Hammer.
- 1-No. 6 Beaudry Hammer \$ 260.
- 1-300 lb. Bradley Helve... 300.
- 1-500 ton Mesta Hydraulic.
- 1-No. 168 3/4 Toledo Toggle.
- 1-No. 148 Bliss Toggle.
- 1-NEW 2000 lb. Bd. Drop 2750.
- 1-NEW 3000 lb. Bd. Drop 3000.

SCREW MACHINES AND TURRET LATHES

- 1-18" Libby.
- 1-26" Libby.
- 2-21" Gisholts
- 1-24" Gisholt.

MISCELLANEOUS

- 1-Hendey Centering Mach...\$ 200.
- 1-No. 14 P. & W. Profiler... 350.
- 1-26" Newton Cold Saw motor drive 500.
- 6-No. 3-26" B. & S. Gear Cutters 350.
- 1-No. 6-60" B. & S. Gr. Cut. 650.
- 1-Newton 36" Slotter M.D. 1500.
- 1-15" Gleason Generator... 500.
- 1-2 1/4" Acme Bolt Cutter... 250.

If the machines you need are not herein listed send us your requirements. We can fulfill your needs.

WIGGLESWORTH MACHINERY CO., 170 Summer St., BOSTON, MASS.

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Attractive Prices To Move Stock

BORING MILLS:	Rockford Hor. Boring, Drilling and Tapping Machine. D. & H. Horizontal Floor Borer 5' bar. Betts 7' 10" Vertical.
CRANES:	Traveling D. C. & A. C. Traveling Hand Power Northern Engineering. 10 ton 46' 8" span. 12 ton 33' 8 1/4" span.
DRILLS:	No. 124 Buffalo Post. 14" Rockford, 24" Foote-Burt. 2' Foadick, 3' Bickford, t. a. Natco No. 10 C-12 Spindle, No. 1 M. T.
LATHES:	14"x6' Hendey, t. a. 16"x6' Monarch, q. c. g. 16"x8' South Bend, M. D., T. A. 24"x10' Lodge & Shipley. 30"x16' Lodge-Shipley q. c. g. 36"x14' Bradford q. c. g. 3"x36" Jones & Lamson turret.
MILLING MCHES.:	Ingersoll Fixed Rail, 24"x21"x20" table. Ingersoll Slab 30"x30"x12", m. d. No. 4 Brown & Sharpe Universal. No. 4 Cincinnati Plain High Power. Standard No. 4 1/2.
PUNCH & SHEAR:	Canedy-Otto, hand power, 1 1/2"x1 1/2". No. 6 Long & Allstatter S. E. Ryersford No. 3, 16" throat 1"x1". Wain & Roos 15" throat, 3/4"x1 1/2". Mamillon 22" throat, 3/8"x3/8", arch jaw. Cleveland "EF", 36" throat 1 1/4"x1". Cleveland E. F. 48" throat 1 1/4"x1", arch jaw. Beatty Single End 48" throat 1 1/8"x1 1/4" motor drive. Industrial Double End, 7/8"x3/8". No. 3 H. & J. Angle Shear 6"x6"x1". Lennox Rotary Bevel Shear, 3/4". Whiting No. 2 Rotary Shear 3/16".
GRINDERS:	Landis No. 5 Cylinder. Bryant No. 6 Chucking.
SHAPERS:	20", 24" Gould & Eberhardt, b. g., 20" Cincinnati. Air Compressor, Chicago 10x12 motor drive.
MISCELLANEOUS:	Air Compressor Curtis, 6"x6". Boiler, 100 H. P. Horizontal Tub. Bolt cutter, Reliance 2". Brake, Chicago Hand, 72"x1/16". Hammer, 250 lb. Little Giant m. d. Planer, 48"x48"x16' D. & H. Openside. Presses, No. 0 Consolidated, O. B. I. Presses, No. 1—No. 3 V. & O.—O. B. I. Presses, Nos. 18 Bliss, Perkins. Press, 50 ton Lourie Hydraulic. Presses, Arbor, No. 3 1/2 Greenerd; No. 1 Atlas. Saws, Hunter 24" hi-speed, m. d.; 18" Higley Cold. Screw Machines, Cone Automatic 3/8", M. D. Screw Mchs., 2 1/4"x11" Acme; Meriden, 6 hole turret. Welding Plate, 44 1/2"x6' 8", 6 1/2" thick.

RUSSELL MACHINE COMPANY

1447 Oliver Building,

PITTSBURGH, PA.

High Grade Machine Tools

Lathes

- 36"x18" Fifield Engine Lathe.
- 26"x18" Walcott, 3S. C. D. B. G.
- 24"x15" Lodge & Shipley, Q. C. G.
- 27"x12" Sidney, H. D. 3S. C. D. B. G.
- 24"x12" Boye-Emmes, 3 S. C. D., D. B. G., Q. C.
- 23"x12" LeBlond 3 S. C. D. B. G.
- 22"x12" American, 3S. C. D., D. B. G., brand new.
- 24"x10" Lodge & Shipley, Q. C.
- 21"x10" LeBlond, 3 S. C. D., D. B. G., late type.
- 18"x10" Schumacher - Boye - Emmes, 3S. C. D., D. B. G., late type.
- 15"x10" Whitcomb-B. Q. C. 3 S. C.
- 16"x8" Prentice Grd. Hd. S. P. D.

Grinders

- No. 70 Heald Grinder.
- No. 60 Heald Grinder.
- 16"x72" Landis Crankshaft, Self Con.

- No. 3 Ohio Plain.
- No. 3 Cincinnati Vert. H. P., S. P. D.
- No. 1 1/2 Milwaukee, Double Over-arm, S. P. D. Universal.
- No. 6 Whitney Hand Millers.

Planers

- 24"x24"x8" Gray Planer.
- 30"x30"x8" Cincinnati Planer.
- 30"x30"x8" Powell, two heads.
- 26"x26"x12" Whitcomb-B., 2 heads.
- 36"x36"x12" Gray, 2 heads.
- 48"x48"x20" Gray, 3 heads.

Radial and Upright Drills

- 26" Cincinnati Upright, C. D.
- 26" Rockford Upright, C. D.
- 2 1/2" Fordick, Motor Drive or S. P. D.
- 3" Fordick, S. P. D. thru gear box.
- 3-sp. Avey High Speed Ball Bearing.
- 6-spindle Rockford 20" B. G. P. F.
- 20" Barnes Camel Back.
- No. 30 Natco Multiple Spindle.

No. 1 1/2-B Milwaukee Universal Milling Machine Double Over-arm; S.P.D. Universal Equipment.

- 6"x18" Landis Plain, Self Contained.
- No. 2 Landis, Universal.
- 12"x66" Landis Plain.
- 10"x52" Landis Plain, Self Con.
- No. 4 Landis Universal.
- No. 6-20" Besley Disc Grinder, (New)
- No. 4-A Landis Special Automotive.
- No. 1 LeBlond Tool Grinder.
- Modern Chaser Grinder.

Gear Cutters

- 30" Flather Auto. Gear Cutter.
- No. 3-26" Brown & Sharpe, late type.
- No. 12 Barber-Colman Hobber, dbl. overarm, late type
- 39" Schuchardt-Schutte Gear Hobber.
- 18-H Gould & Eberhardt Hobber.
- 34" Whiton Auto. Bevel and Spur.

Boring Mills

- 34" Gisholt Vertical one turret head.
- 48" Colburn Vert. 2aw. hds., late type.
- 60" Bullard Vertical 2 hds., S. P. D.
- 96" Bickford Vertical.
- No. 1 Rockford, Horizontal 2" bar.

Milling Machines

- No. 5 Brown & Sharpe Plain.
- No. 4 Cincinnati, Plain.

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Cincinnati Machinery & Supply Co.
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Shapers

- 15" Smith & Mills.
- 16" G. & E. High Duty, cone drive.
- 20" Cincinnati Crank, B. G.
- 24" Queen City heavy duty, cone dr.
- 24" Hendey.
- 26" Potter & Johnson, cone drive.

Miscellaneous

- 6x6 Curtis Air Compressor.
- 1" National Bolt Cutter, complete.
- 1 1/2" Landis Double Spdl. Bolt Cutter.
- 2 1/2" Landis Bolt Cutter, Single-Spindle, lead screw.
- No. 2 LaPointe Broaching Machine.
- 12"x12" Racine Hack Saw.
- No. 1 Davis Keyseater.
- No. 2 Davis Keyseater.
- No. 3 Baker Keyseater.
- No. 4 Garvin Profiler.
- No. 2 Kane & Roach Multiple P. & S.
- No. 76 1/2 Toledo Grd. Punch Press.
- No. 42 Toledo Press.
- No. 75 1/2 Bliss open back, geared.
- Wicks Punch & Shear, 48" throat, 1 1/4" thru 1 1/4".
- No. 8 Long & A. Punch & Shear.
- No. 2 Garvin Vertical Tapper.

REDUCED PRICES

On All Of These

Presses

600 ton American Can Embossing Press, motor drive.
 3½ B Bliss toggle draw press.
 1½ B Bliss toggle draw press.
 7 Zeh & Hahneman percussion screw.
 69 Stoll st. side geared, 8" stroke, steel tied frame.

Drills

12C Fox multiple, nearly new.
 No. 2 Foote Burt, 4 spdl. gang.
 3 spdl. Henry & Wright ball bear.
 3 spindle Allen ball bearing.
 2 spindle Allen ball bearing.
 Sipp ball bearing.
 36" Cincinnati, tapping attach.
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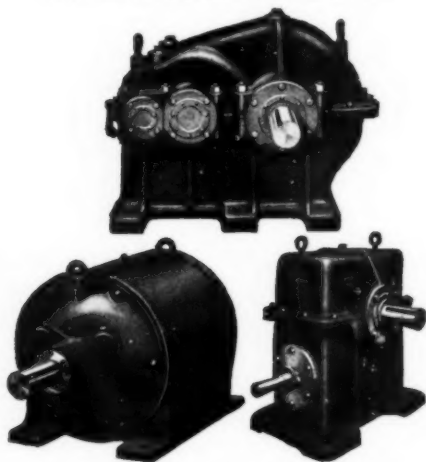
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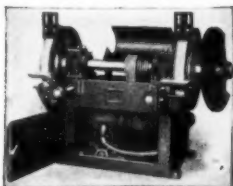
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